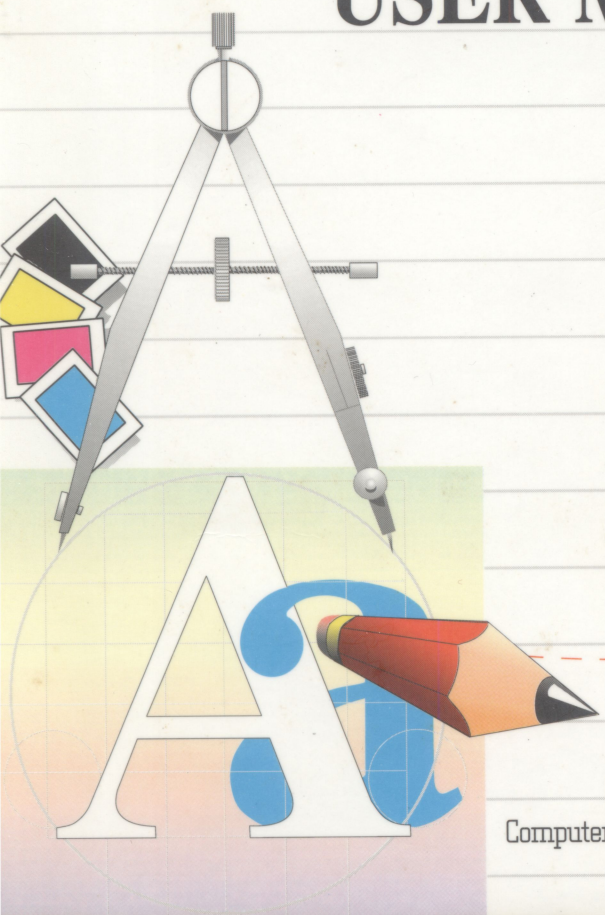
Art Works

USER MANUAL



Computer Concepts Ltd

Serial Nº

User Manual

Computer Concepts Ltd

Gaddesden Place, Hemel Hempstead, Herts HP2 6EX
Tel 0442 63933 – Fax 0442 231632

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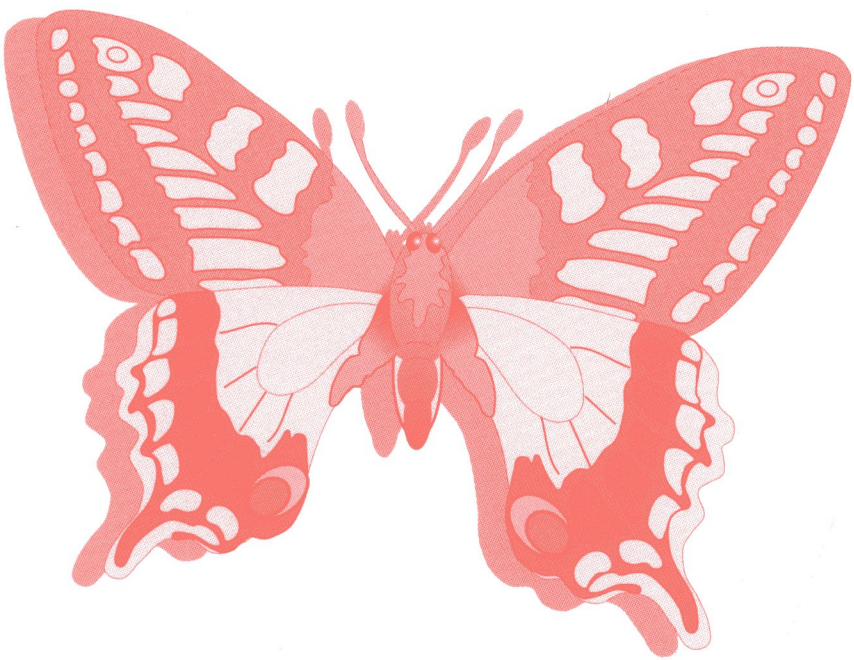
Chapter 1:

Introduction to ArtWorks



WELCOME TO ArtWorks

ArtWorks is the truly professional graphic illustration package for the Archimedes range of computers. You will find producing simple illustrations quick and easy. You select the drawing tools you want from an on-screen toolbox and just draw. Information about the current tool is also displayed on-screen in an information bar. Every change you make is recorded by ArtWorks. So, if you make a mistake or change your mind, you can step backwards undoing previous operations. You can experiment knowing you can always return to an earlier stage. Using ArtWorks could not be easier.

But ArtWorks also has the power required by the professional user. The tools provide advanced features such as graduated fills, multi-stage blends, enveloping and perspective. There are the printing options you expect such as colour separations, overprinting and adjustable screens. Colour trapping is easily applied where needed.

ArtWorks satisfies the requirements of all types of user from the novice to the professional.

Some illustrations produced using ArtWorks appear on the chapter heading pages. There's more examples of clip-art in the ArtWorks package.

ABOUT THIS MANUAL

This manual is divided into these sections:

1 **Introduction**
Includes information on ArtWorks terminology and conventions used in the manual.

2 **Using ArtWorks**
Sections detailing how to use the various tools and getting the best out of ArtWorks.

3 **The Main Menu and Program Menus**
Summaries of the menu options.

4 **Utilities**
How to use FlipTop to change screen modes and NewModes to give a wider range of screen modes.

5 **Keyboard short-cuts**
How to access the various tools from the keyboard.

6 **Appendices**
More information about fonts and font families and how to use dialogue boxes. Read this section if you are unfamiliar with using dialogue boxes on the Archimedes.

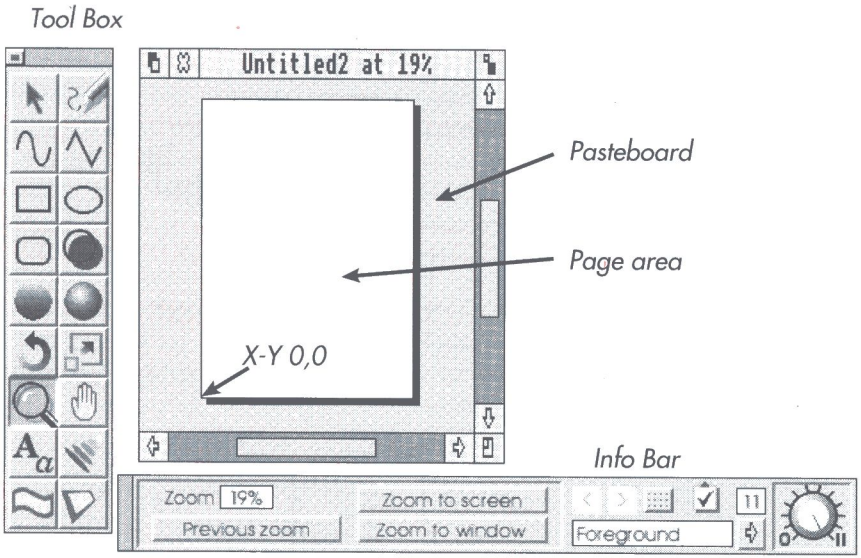
ArtWorks TERMINOLOGY

This section describes some of the terminology used in ArtWorks.

Document

You can think of a document as a conventional sheet of paper. Like a sheet of paper you can draw lines and curves and write text (and erase them later). You can save the document for later use by storing it on disc or printing it.

Unlike conventional paper, the computer provides you with many extra options. You can move objects around on the document just by grabbing them and sliding them around, even over other objects. You can copy objects and re-use them, either on the same document or in a different document. The range of options available is staggering.



ArtWorks documents are displayed as a white page with a wide margin (shown in light grey). This margin is called the *pasteboard*. You can create objects on the pasteboard before moving them onto the page area or move objects onto the pasteboard for temporary storage.

X-Y co-ordinates

In common with most other drawing packages, ArtWorks shows measurements relative to the bottom left corner of the page area.

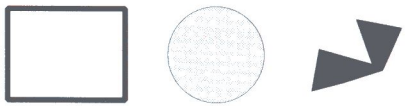
Lines, Shapes and Objects

A **Line** is obvious. A line can be straight, curved or a mixture of both. A line always has two ends and is thus always open. You can apply a thickness, colour and dash pattern to a line.

These are all lines

In PostScript or Draw terminology, a shape is a closed path

A **Shape** is a solid or closed object. The difference between a line and a shape is that a shape has no end points. Because a shape is a closed object you can fill it with a colour or leave it transparent.



These are all shapes

Object Is a general term. This manual uses it where the same information applies to lines, shapes, sprites and text. For example, moving a line is exactly the same as moving a shape or moving text. For brevity we would describe *moving an object.*

These are all objects

Objects and Objects. Many operations in ArtWorks apply equally to a single object or a collection of objects. Object is used to mean both *object* and *objects.*

Bounding boxes

These are imaginary rectangles which surround certain types of object such as lines of text. They show you the size of the complete object.

THE CLIPBOARD

This is a temporary store and is used like a physical clipboard. You can cut or copy part or all of your drawing onto the clipboard. You can then transfer the clipboard contents to another part of the same document or even to a completely different document.

The clipboard can only hold one item or set of items at a time. Placing something on it overwrites any existing contents. Objects remain on the clipboard until deleted or overwritten. This lets you paste the clipboard contents again and again if you wish.

THE CONSTRAIN KEY

The *Ctrl* key has a special function in ArtWorks. It constrains the action of the current operation in some way. For example, normally you can rotate an object though any angle. Hold down *Ctrl* and the rotation is constrained to preset angles.

Similarly, you constrain the Rectangle tool to create a square and constrain the Ellipse tool to create a circle.

THE MOUSE BUTTONS

We use the normal Acorn terminology:

Select is the left-hand mouse button,
Menu is the centre button,
Adjust is the right-hand button.

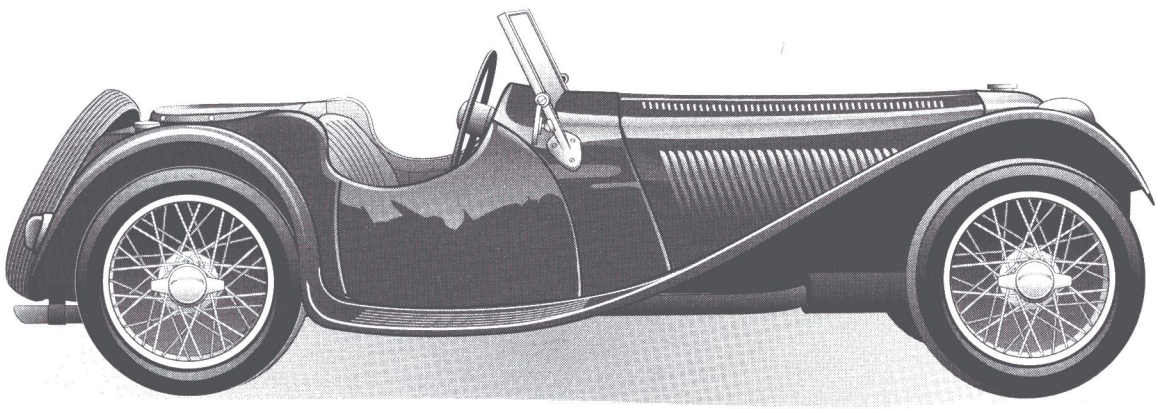
Where we don't specify a button, use **Select**.

In menus and dialogue boxes you can use either **Select** or **Adjust**.

- Using **Select** performs the requested action and removes the menu or dialogue box from the screen.
- Using **Adjust** performs the same action but the menu or dialogue box remains on the screen. This lets you continue choosing options from the menu or changing the dialogue box.

Chapter 2:

Using ArtWorks



DOCUMENT HANDLING

This section covers:

- loading ArtWorks
- starting a new document
- loading a new document
- the ArtWorks window
- the menus
- the clipboard
- opening a second window
- scaling your view
- saving the document
- removing the document from memory
- the on-screen grid

Related sections of the manual:

- Toolbox
- Info Bar

LOADING ArtWorks

To load ArtWorks you can either:

- double-click on the ArtWorks icon in a directory window, or
- double-click on an ArtWorks file icon.

Either method installs ArtWorks onto the icon bar.

STARTING A NEW DOCUMENT

Click on the ArtWorks icon on the icon bar. This opens an ArtWorks window.

The new document is a copy of the *default document*. This is a normal document held within ArtWorks. You can edit the default document, if required, to customise ArtWorks for your precise requirements. For details see *Customising ArtWorks* later in this section.

LOADING AN EXISTING DOCUMENT

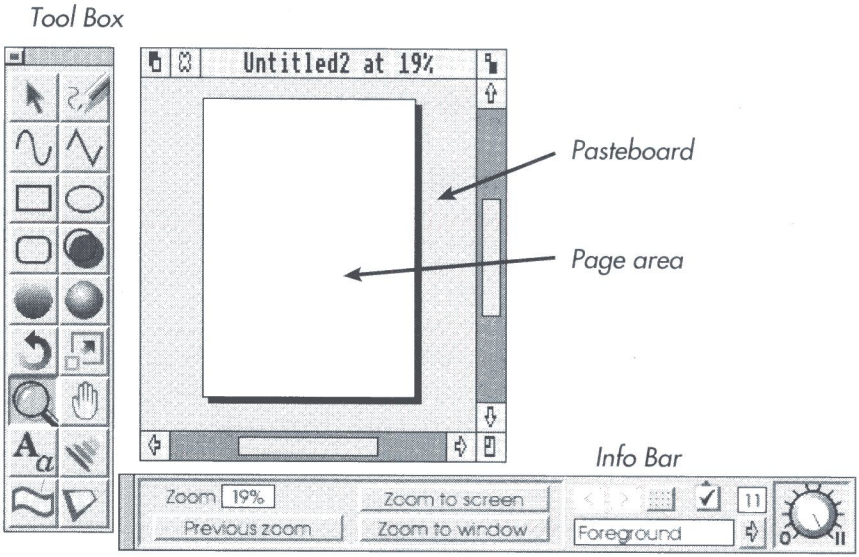
Either:

- double-click on an ArtWorks file icon, or
- drop a file icon onto the ArtWorks icon on the icon bar.

Either method opens an ArtWorks window onto the file.

THE ArtWorks WINDOW

This looks like most other RISC OS windows:



The ArtWorks window is similar to a conventional sheet of paper on an drawing board or easel. The white rectangle represents the sheet of paper (the *page* or *page area*). The grey border (the *pasteboard*) represents the drawing board.

The pasteboard has two uses:

- You can create objects partly on the pasteboard and partly on the page area. For example, you may want half a circle at the edge of your document. It is easier to create a complete circle overlapping onto the pasteboard. When printed, the area on the pasteboard is ignored.
- You can create an object on the pasteboard and then move it to its correct position page area. This is useful when creating very complex illustrations.

One window (the *current window*) on the screen has a yellow Title Bar. Anything you type affects this window. The document with the yellow Title bar is called the *current document.*

THE CLOSE ICON

The Close icon

This can work in two ways:

- By default, clicking on it closes the window. The document remains in memory. To reopen the document, use the Program Menu option *New view.* (This is how the Close icon works in Impression.)

- Clicking on the icon closes the window and removes the document from memory. (This is how the Close icon works in most other applications.)

The *Choices* option in the Program Menu (described in a later section) controls how the Close icon operates.

Removing the document from memory is described later.

THE INFO BAR & THE TOOLBOX

When you click on the ArtWorks window:

- the Toolbox appears on the left-hand side of the window, and
- the Info Bar appears at the bottom of the window.

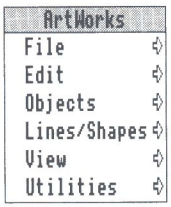
Normally the Toolbox and Info Bar are tied to the window. Moving the window also moves the Toolbox and Info Bar. There is an option (in *Choices* on the Program Menu) to make them free-floating.

Clicking on a tool in the Toolbox selects it. The Info Bar then shows information relevant to that tool.

Tools and the Info Bar are described in detail in later sections.

THE MENUS

The Main Menu



To display this click **Menu** on the ArtWorks window. Most menu options are selected from the Main Menu.

See also the *Menus* chapter for a complete list of options.

The Program Menu

Click **Menu** on the ArtWorks icon on the icon bar.

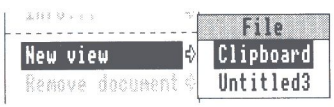
See the *Menus* chapter for a complete list of options.

THE CLIPBOARD

The clipboard is a separate storage area used for transferring objects around ArtWorks. The clipboard holds one object or set of objects. When you put something new on the clipboard it overwrites any existing contents.

You can view the clipboard contents:

- using *New view* on the Program Menu, or
- using the Info Bar. (See *Info Bar* for more information.)



OPENING A SECOND WINDOW

You may want to open a second window to:

- get an enlarged or reduced view of the document, or
- show another part of the document, or
- have two views on the same area at different WYSIWYG settings.

See the Info Bar description for details of the WYSIWYG control.

Only the current window shows control points and bounding boxes. With complex illustrations this can be confusing (but necessary). A second window can be helpful.

Use *New view* in the Program Menu to open another window.

SCALING THE VIEW

The initial view of the window is 100% (full size). It's often useful to enlarge your view of the document to examine details or reduce your view to get an overall impression. Scalings above 100% show an enlarged view; below 100% a reduced view. All you change is your view onto the document. The size of the document itself and the objects in it are unchanged. (Changing the document size is described later.)

Click on the Zoom tool to select it.

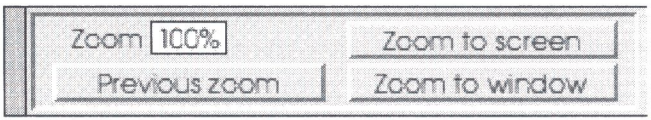
Zoom tool

Using the Zoom tool

- Click **Select** to enlarge the view (to see a smaller part of the document in greater detail).
- Click **Adjust** to reduce the scaling (to see more of the document).
- Press and hold down **Select**. Dragging the mouse diagonally creates a rectangle. When you release **Select**, the area within the rectangle is enlarged to fit the window.

For 100% scaling hold down the *Ctrl* key and click either **Select** or **Adjust**.

Using the Info Bar



Zoom tool Info Bar

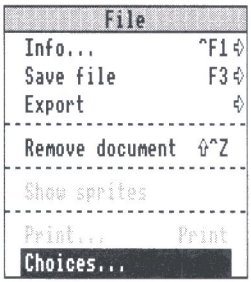
To change the scaling using the Info Bar, you can:

- Type a value (1 - 999%) into the *Zoom* box. Press *Return* to implement the change.
- Click on *Previous zoom*. This is the scaling before the current setting. Using this button lets you flip between two scalings to zoom in and out on the document. This is useful for flipping between examining an area in detail and an over-all view of the illustration.
- Click on *Zoom to screen*. This scales the document so that the page area exactly fits within the screen.
- Click on *Zoom to window*. This is similar to *Zoom to screen* except that the page area exactly fits within the window. (You may need to full the window to see all the page area.)

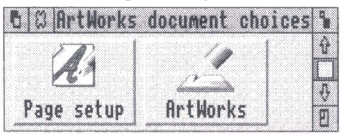
CHANGING THE PAGE SIZE

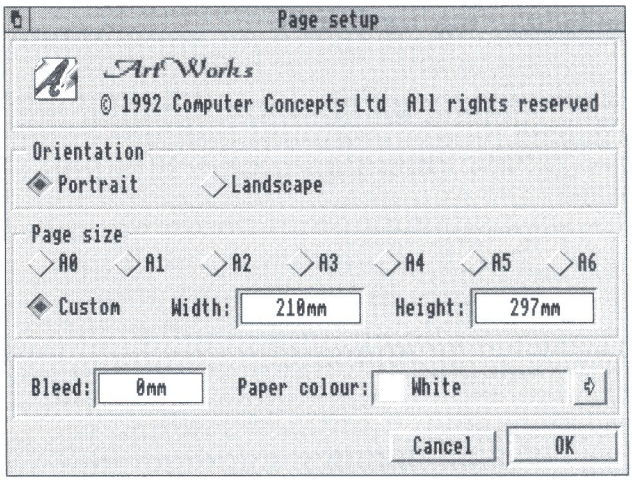
When you open an ArtWorks document the paper size is standard A4 (210x297mm). This size of paper is suitable for most printers. However you can change the page size if required.

Choose *Choices...* on the Main Menu.



Click on *Page setup*.





The Page set-up dialogue box

Orientation

Portrait orientation is the longest sides vertical.
Landscape orientation is longest sides horizontal

Page size

A0	840 x 1188mm	33.07 x 46.77inches
A1	594 x 840	23.39 x 33.07
A2	420 x 594	16.54 x 23.39
A3	297 x 420	11.69 x 16.54
A4	210 x 297	8.27 x 11.69
A5	148.5 x 210	5.85 x 8.27
A6	105 x 148.5	4.13 x 5.85

For other sizes, click on *Custom* and type in the required width and height.

Bleed

Bleeds are required for work that will be printed by a commercial printer. For more information on this, see the *Commercial Printing* supplement.

Paper colour

To change the default paper colour click on the arrow to the right. This displays the Colour Menu. Choose a colour from this menu.

The section on the Colour Editor has more information on the Colour Menu.

SLIDING THE DOCUMENT WITHIN THE WINDOW

To move the document within the window you can:

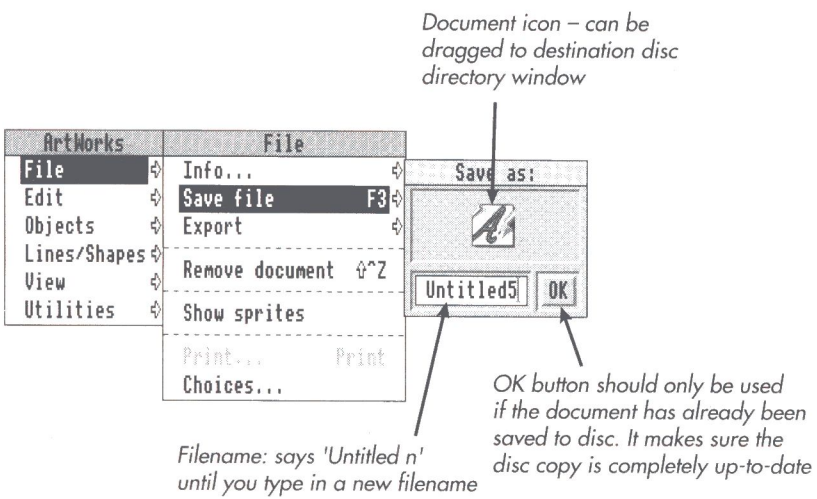
- Use the scroll bars and arrows at the side of the window. (Refer to your computer's *Welcome Guide* for more information on using Scroll Bars.)
- Using the Push tool (keyboard short-cut is the right-hand *Alt key*). Click on the tool to select it. Then hold down **Select** and you can slide the document around in the window. This is usually the easier method.

Push tool

SAVING THE DOCUMENT

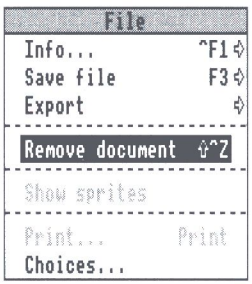
(Keyboard short-cut *F3*.)

This section covers saving in ArtWorks own format. Refer to *Importing & exporting drawings* for details of saving in Draw and EPS formats.



We recommend that you always save documents regularly. A complicated drawing may represent many hours work and power failures or computer crashes always happen at just the wrong moment.

REMOVING THE DOCUMENT FROM MEMORY



As already described, clicking on the Close Icon may not remove the document from memory. To remove the document, use either:

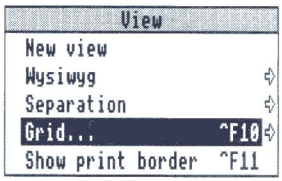
- the menu option *Remove document*

or

- the keyboard short-cut of *Ctrl-Shift-Z*.

You are warned if you have changed the document but not saved the changes.

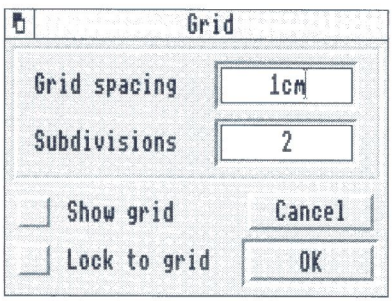
ON-SCREEN GRID



To help you lay out your document, ArtWorks can display a grid on the screen. (The grid appears only on the screen; it is never printed.) The grid helps you align objects. (Similar to using graph paper to a drawing aid.) You can also use the grid as a simple ruler by choosing a suitable grid spacing.

Also you can select *Lock to grid*. The grid points then act like magnets and as you move objects they snap to the nearest grid point.

The *Grid..* option displays a dialogue box (or type *Ctrl-F10*):

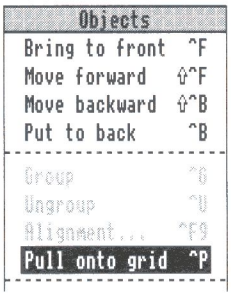


Grid spacing and *Subdivisions* define the distances between points on the grid. With the settings shown grid points are every 5mm with major points every 10mm (1cm). You can set the spacing and subdivisions that seem most logical or appropriate for your requirements.

Show grid displays the grid on screen.

Lock to grid means that the grid points act as magnets.

You can also control *Show grid* and *Lock to grid* from the Info Bar. See the Info Bar description.

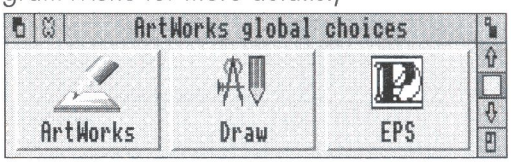


A further option lets you snap individual objects to the grid:

1 Select the object or objects.
2 Click on *Pull onto grid* (or type *Ctrl-P*). This pulls the bottom left corner of that object's bounding box to the nearest grid point.

MEASUREMENT UNITS

You can define which units to display measurements in. The default display units are points ($^1/_{72nds}$ of an inch) for text and millimetres for other measurements. ArtWorks *Choices* in the Program Menu lets you change the display units. (See *Program Menu* for more details.)



You can enter dimensions in the current display units as numbers without specifying any units. You can also enter dimensions in the other units by using a suffix. For example, *2.5in* for 2.5 inches.

Acceptable units and their suffices are:

millimetres	mm
centimetres	cm
metres	m
inches	in
yards	yd
points ($^1/_{72nds}$ inch)	pt
picas ($^1/_{6ths}$ inch	pi

(You cannot use Metres or Yards as display measurements.)

CUSTOMISING ArtWorks

You may find that some aspects of the ArtWorks set-up are inconvenient for you. For example, the default page size is A4; you may work with a different page size. Customising ArtWorks for your requirements is simple.

Before you make any changes always save any open files and quit other applications loaded on the icon bar.

1. Hold down the *Shift* key and double-click on the ArtWorks icon in a directory window. This opens a directory window showing the contents of ArtWorks. **DO NOT CHANGE OR DELETE ANY OF THESE FILES – ArtWorks MAY STOP WORKING OR CORRUPT YOUR DOCUMENTS IF YOU DO.**
2. Double-click on *Auto*. This opens a second directory window showing the tools and the default document.

To change the default document (*DefDoc*) load it into ArtWorks, make any changes you want and then save it back to the *Auto* directory.

Also in this directory window are the various tool modules. If you do not want a particular tool, delete it. (Remember to keep a copy – you may want to put it back in the future.) **Do not delete !LdSvNativ, !PathTool, !Selector, or DefDoc. ArtWorks will stop working if you do.** The simplest set of tool modules is *!LdSvNativ, !PathTool* and *!Selector*. They provide you with these tools:

Select
Straight, Curve, and Freehand lines
Flat, Linear and Radial fills
Ellipse, Rectangle and Rounded rectangle.

Other ArtWorks tools may become available in the future. You can also load these into this directory.

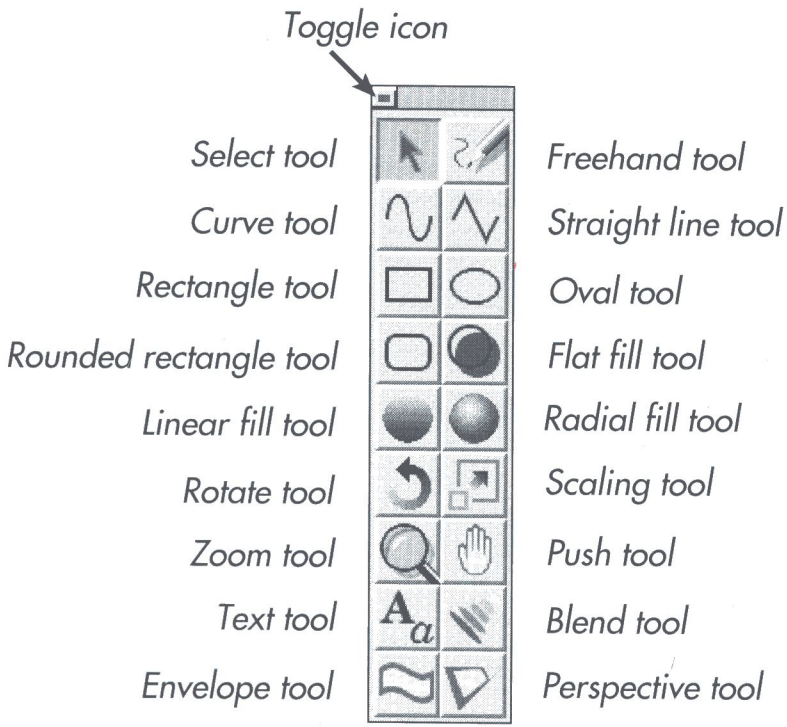
After making any changes always reset your computer by pressing *Ctrl-Reset* and reloading ArtWorks.

TOOLBOX

This section covers:

- the Toolbox layout
- re-ordering the Toolbox

Subsequent sections describe using the individual tools.

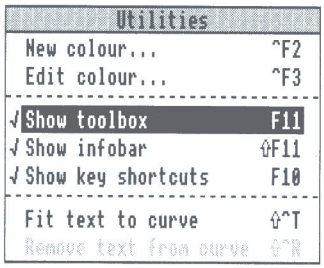


The illustration shows the standard layout of the Toolbox. Because ArtWorks is a modular program, it is easy to add new tools to the Toolbox. The layout of the Toolbox will then differ from that shown.

The Select tool is probably the most used tool. It has two short-cuts:

- *Ctrl-F2* to select it, and
- the Left-hand *Alt* key to temporarily select it. When you release the *Alt* key, the previous tool is reselected.

DISPLAY/HIDE TOOLBOX



The Toolbox is normally displayed whenever you select an ArtWorks window. To remove the Toolbox from the screen (or to redisplay it) either:

- use the keyboard short-cut of *F11*, or
- choose *Show Toolbox*.

  (A tick to the left of *Show toolbox* tells you the Toolbox is displayed on the screen possibly hidden by other windows.)

FREE-FLOATING TOOLBOX

See Program Menu for details of this option

Normally the Toolbox is tied to the selected window. Move the selected window and the Toolbox follows it. You can make the Toolbox free-floating (not tied to a window). This option is in ArtWorks *Choices* on the Program Menu.

WIDTH OF TOOLBOX

See Program Menu for details of this option

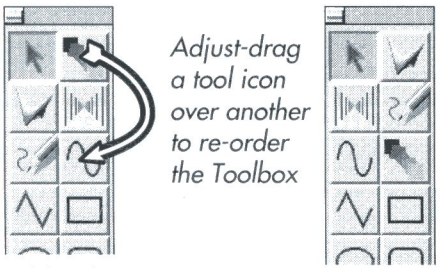
The default width of the Toolbox is two icons wide. You can choose between 1, 2, 3 or 4 icons wide. This option is in ArtWorks *Choices* on the Program Menu.

TOGGLE ICON

You can display the Toolbox horizontally or vertically. (The illustrations shows it arranged vertically.) Click on the toggle icon to change between the two.

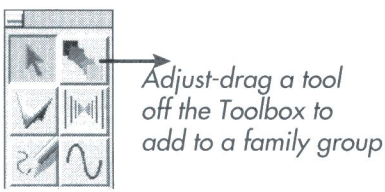
RE-ORDERING THE TOOLBOX

You can change the order of the tools in the Toolbox to suit your own requirements.

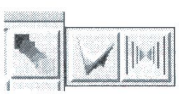


Adjust-drag – drag the tool using Adjust (the right-hand mouse button)

You can also group the tools into families. This reduces the size of the Toolbox.



When over a family of tools the pointer changed to a menu shape. Click **Menu** to display the other members of the family.



To remove a tool from a family **Adjust**-drag it back onto the Toolbox.

You can group tools into six families:

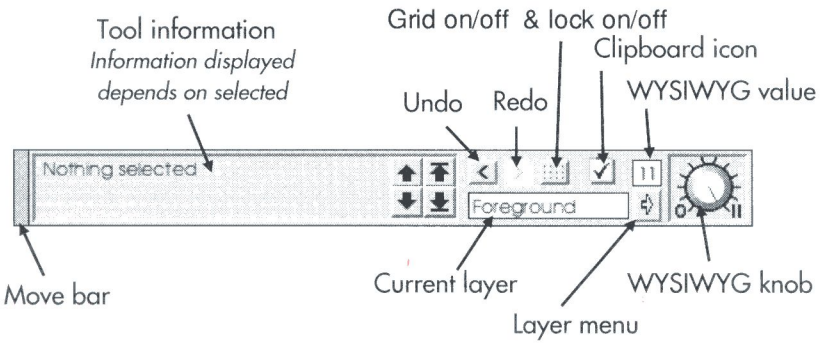
- Straight line, Curve and Freehand tools,
- Flat fill, Linear fill and Radial fill tools,
- Rotate and Scale tools,
- Blend, Perspective and Envelope tools,
- Rectangle, Ellipse and Rounded rectangle tools,
- Push and Zoom tools.

The Select and Text tools are not part of a family and so cannot be grouped.

INFO BAR

This section describes:

- the controls on the Info Bar

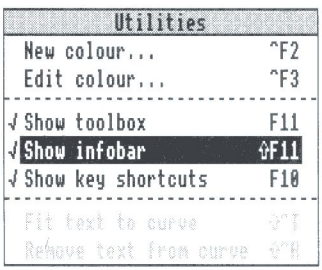


REMOVING THE INFO BAR

To remove the Info Bar from the screen or to redisplay it either:

- use the keyboard short-cut *Shift-F11* or
- choose *Show infobar*.

(A tick to the left of *Show infobar* tells you the Info Bar is displayed on the screen possibly hidden by other windows.)



FREE-FLOATING INFO BAR

Normally the Info Bar is tied to the selected window. Move the selected window and the Info Bar follows it. You can make the Info Bar free-floating (not tied to a window). This option is in ArtWorks *Choices* on the Program Menu.

See Program Menu for details of this option

THE MOVE BAR

You can move the Info Bar relative to the ArtWorks window. Drag the Move Bar as required.

TOOL INFORMATION

This contains information about the currently selected tool. The descriptions of the various tools give you further information.

Undo/Redo BUTTONS

The Undo & Redo operations are described in a separate section.

These provide a simple way to call the Undo and Redo operations. A button is shown with a white background if the action is disabled. In the illustration, the *Redo* button is disabled. A button is disabled when no further Undo or Redo operations are possible.

GRID CONTROL

For more information on using the Grid refer to Document Handling

This provides an alternative to the Grid dialogue box.

Click **Select** on this button to toggle *Lock to grid* on and off. The button has an orange background when *Lock to Grid* is selected.

Click **Adjust** to toggle both *Show grid* and *Lock to grid.*

CLIPBOARD ICON

Dragging the clipboard icon onto the window copies the clipboard contents into the document.

Double-clicking on the icon opens a window onto the clipboard. You can then edit the clipboard contents.

WYSIWYG KNOB & VALUE

When set to maximum (11) the document is displayed on screen exactly as it will be printed. (Except that the monitor is lower resolution than a printer and has a more restricted range of colours.) To enhance the image a technique called "anti-aliasing" is used. This slightly blurs the edges of objects to give an improved appearance by removing jagged edges ("*jaggies*").

At minimum (0) only the outlines of the shapes appear. (They are drawn as *wire frames.*)

The intermediate settings provide varying degrees of compromise between the two.

Complicated drawings displayed with full WYSIWYG have two disadvantages:

- they can slow down screen update and response to pointer movements.
- It can be difficult to pick out a particular object for editing or moving.

Reducing the amount of WYSIWYG overcomes both these disadvantages but with a less realistic screen display.

Use the pointer to turn the WYSIWYG knob. Clicking anywhere on the box turns the knob to align with the pointer.

The value editable field shows the current setting of the WYSIWYG knob. You can also type directly into this field. Press *Return* to change the value.

WYSIWYG settings

0-2 Line are shown in black
3-11 Lines are shown in their true colours

0-6 Line thickness is ignored (wire-frames)
7-11 True line thicknesses are used

0-8 Dash patterns and end caps are ignored
9-11 Dashes and end caps are displayed

0-2 Text is filled with black
3-11 Text is filled with true flat fill

0-4 Text is not anti-aliased
5-11 Text is anti-aliased

0-1 Blends show only start and end objects
2-11 Blends show all intermediate objects

0-2 Sprites are shown as outline rectangles
3-11 Sprites are shown

0-3 Fills are not shown
4-5 Flat fills (graduated fills are shown as flat)
6-11 True fills

0-10 Separations are shown as tints of black
11 Separations are shown in their true colour

CURRENT LAYER & LAYER MENU

Refer to *Blends, Perspective, Envelopes & Layers* for more information on Layers.

UNDO & REDO

This section covers:

- using the Undo facility
- using the Redo facility

We all make mistakes or change our minds. ArtWorks makes it easy to correct mistakes or cancel out unwanted changes. Also, illustrations lend themselves to experimentation. ("What would it look like if I did this?")

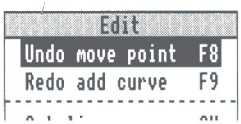
Every action you make is recorded in an Undo buffer. This lets you undo not just the last operation but also to step back undoing successive operations. Thus, you can experiment knowing you can always remove anything that doesn't look correct.

When the buffer becomes full, the oldest information is automatically discarded. Thus, the buffer always remembers the most recent sequence of actions. (The number of actions recorded in the Undo buffer depends on the complexity of the actions and the size of the buffer.)

THE Undo COMMAND

This cancels the effect of the last operation. To invoke the Undo command you can either:

- click on the Undo button on the Info Bar,
- choose *Undo* on the *Edit* submenu (the exact wording tells you what the next undo step is),
- use the keyboard short-cut of *F8*.

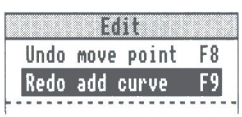


You can repeat the Undo command to step back through the sequence of operations.

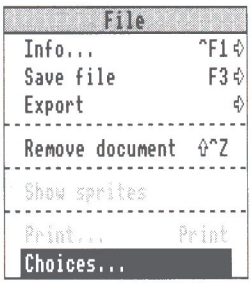
THE Redo COMMAND

This cancels the last Undo command. To invoke the Redo command, you can either:

- click on the Redo button on the Info Bar,
- choose *Redo* on the *Edit* submenu (the exact wording tells you what the next redo step is),
- use the keyboard short-cut of *F9*.



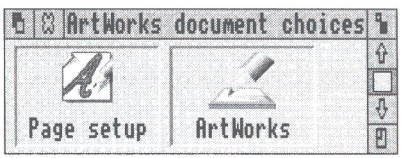
CHANGING THE LENGTH OF THE Undo BUFFER



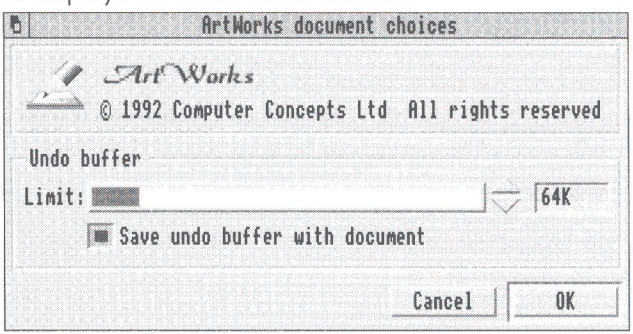
You can increase or decrease the maximum size of the Undo buffer in each ArtWorks document.

Choose *Choices...* on the Main Menu.

Click on *ArtWorks*.



This displays the Undo buffer control.



Using bump icons is described in the Using dialogue boxes appendix

Slide the grey bar or click on the bump icons to alter the size of the Undo buffer. The current size is shown in the box to the right. Decreasing the size of the buffer saves memory and disc space but reduces the number of previous Undo steps.

You can also choose not to save the Undo buffer with the document. This saves disc space but all Undo information for that document is lost when you remove the document from memory.

DRAWING LINES & SHAPES

This section covers:

- using the line tools
- creating shapes (polygons)
- creating rectangles, squares, ellipses and circles

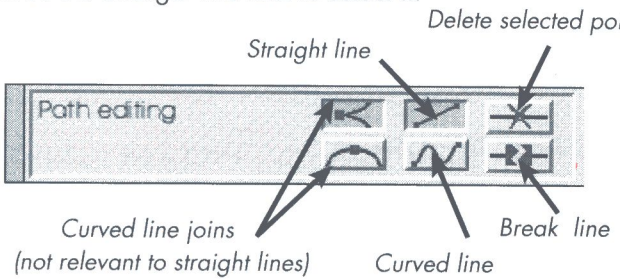
Related sections of the manual:

- object handling
- fills

DRAWING A LINE

Click on the Straight line tool to select it.

Straight line tool



Line tool Info Bar

1 Position the pointer where you want the line to start.

2 Click **Select**. A control point appears to mark the start of the line. (You can start a line at either end – you don't have to work left-to-right or top-to-bottom.) The control point is shown surrounded by a red square. This shows it is the **selected control point**.

3 **Either**:

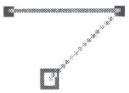
Move the pointer and click where you want the line to finish. Click **Select** again. A second control point appears and a line joins the two squares.

Or

Drag the pointer to create the line. Release **Select** when the line is in the correct position.

The new point is now the selected control point and has the red square.

EXTENDING THE LINE



Simply reposition the pointer and click **Select** again.

Each time you place a new control point and draw a new line segment to the selected control point.

FINISHING THE LINE

When you have completed the line:

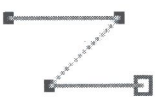
- click on **Adjust**, or
- hold down the *Left-hand alt key* key and click on an unused part of the document.

This tells ArtWorks you have finished the line.

MOVING A CONTROL POINT

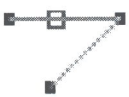
1 Move the pointer over the control point.
2 Press and hold down **Select**.
3 Keep **Select** held down and drag the control point to its new position.

ADDING A NEW CONTROL POINT



To the end of a line:

1 If necessary click on the required end point to select it.
2 Position the pointer and click **Select**.



To the middle of a line:

1 Click **on the line** to add a new control point.
2 Drag the control point to the required position.

DELETING A CONTROL POINT

1 Click on the control point to select it.
2 Click on the **Delete point** tool on the icon bar.

SELECTING MULTIPLE CONTROL POINTS

You may want to select several control points to, for example, delete them or move them as a group.

1 Select one control point in the normal way by clicking on it.
2 Select the other control points by **Adjust**-clicking on them.

If you accidentally select the wrong control point, you can deselect it by **Adjust**-clicking on it a second time.

CONSTRAINING THE LINE

Creating a line

Holding down the Constrain Key (*Ctrl*) has no effect when creating a line.

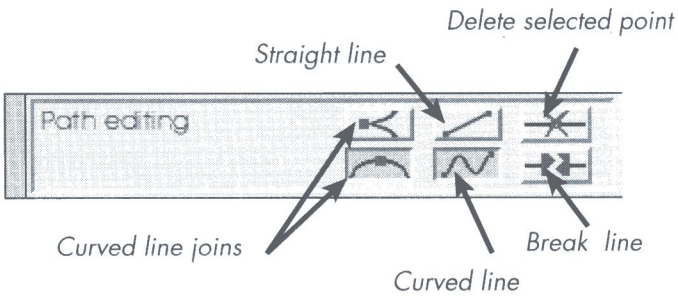
Moving a control point

The current line segment can only rotate through multiples of the constrain angle.

The constrain angle is set in preferences. See Program Menu for details.

DRAWING A CURVE

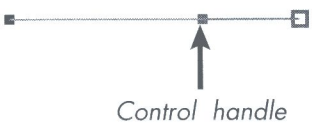
Curve tool



Drawing a curve is similar to drawing a straight line.

1. Click on the *Curve* tool to select it.
2. Position the pointer over the start of the curve.
3. Click **Select** to place the control point.
4. Move the pointer and click again to place the second control point.

This draws a line between the control points. There is an additional square shown on the line, a short distance from the second control point (which is the selected point). This additional square is the *Control handle* and is used to control the angle and radius of the curve relative to the selected point.



Control handle

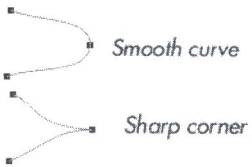
MOVING THE CONTROL HANDLE

Rotate the control handle about its control point to change the angle at which the curve meets the control point.

Move the control handle towards or away from the control point to change the curve.

MAKING SHARP CORNERS

Normally ArtWorks draws a smooth curve through a control point. For this, the two control handles either side of a control point are linked. Moving either control handle also moves the other.



Sometimes you want a sharp corner. For this, you need to unlink the control handles. Either:

- double-click on the control point, or
- click on the *Sharp corner* icon on the Info Bar.

Sharp corner icon

Initially this doesn't change the shape of the curve. However, you can now move each control handle independently.

MAKING SMOOTH CURVES

This is normally how ArtWorks draws curves.

To convert a sharp corner into a smooth curve either:

- double-click on the control point, or
- click on the *Smooth curve* icon on the Info Bar.

Smooth corner icon

This converts a sharp bend into a smooth curve. The two control handles become linked and move to opposite sides of the control point. This may change the shape of the curve.

MIXING CURVED AND STRAIGHT LINE SEGMENTS IN THE SAME OBJECT

To create an object which is a mixture of straight and curve segments, just switch between the two tools as you create the object.

CHANGING A STRAIGHT LINE TO A CURVE (AND VICE VERSA)

Straight

Curved

1 Select the two control points at either end of the line segment,
2 Click on the *Straight* or *Curved* icons on the icon bar.

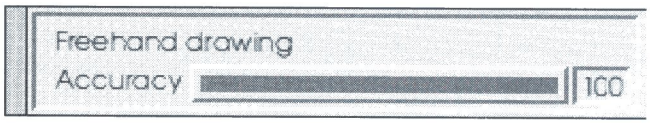
After changing the line type, you may need to move control points for a smooth transition between curved and straight line segments.

You can select several line segments and convert them all. The control points at both ends of the segment must be selected. Any segments with only one control point selected don't change.

DRAWING FREEHAND LINES

Freehand tool

Click on the *Freehand* tool to select it.



Freehand tool Info Bar

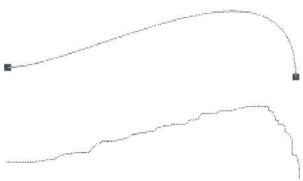
Drawing a freehand line is slightly different to drawing a straight line or curve.

1 Position the pointer where you want the line to start.
2 Press **and hold down Select**.
3 As you drag the pointer around the document, you will see a rough line appear along the path you draw.
4 Release **Select** to terminate the line.

When you release **Select**, ArtWorks converts the freehand line into one or more line segments.

The slider on the Info Bar controls this conversion.

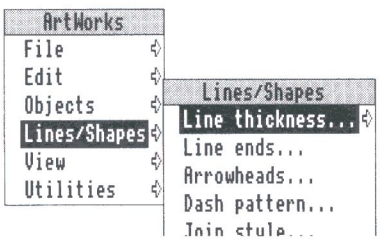
- 0% converts the freehand line into the smallest possible number of segments. Shallow curves tend to convert to straight lines.
- 100% converts the line into a greater number of segments which more closely follow the original line. The greater number of segments increases the size of the final document.



Experience shows the range 0–40% is the most useful.

CHANGING THE APPEARANCE OF A LINE

Use the *Lines/Shapes* menu.

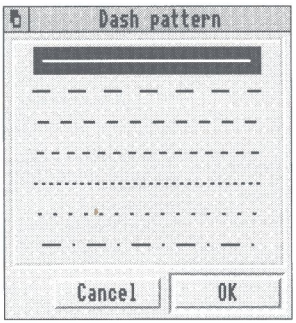


Line width

Either:

- Click on *Line thickness...* and type in a new line thickness.
- Choose one of the default line thicknesses from the lower part of the menu. (0.25pt is 0.09mm, 0.003inch; 12pt is 4.23mm, 0.17inch.)

(You can use any of ArtWorks standard measurement units.)

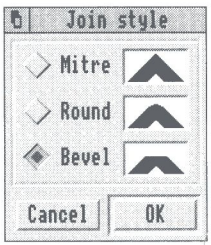


Pattern

This sets the style of the lines.

Choose *Dash pattern...*

Click on the the required pattern and then click *OK* to change the line.

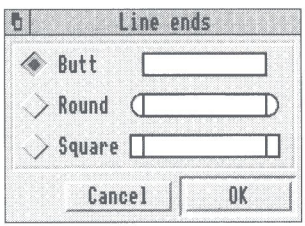


Join style

This sets the style of corners.

Choose *Join style...* or type *Ctrl-F8*.

Click on the appropriate radio button and then click on *OK* to change the join style.



Line ends

This sets the style of the two ends of a line.

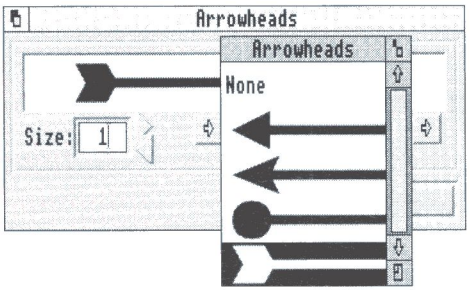
Click on *Line ends...* or type *Ctrl-F5*.

Click on the appropriate radio button and then click on *OK* to change the line end style.

Arrowheads

ArtWorks offers you a range of arrow head styles.

Click on *Arrowheads...* or type *Ctrl-F6*.



On the left is the style for the start of the line; on the right, the end of the line. To change the arrowhead choose a new option from the menu.

To change the size of the arrowhead relative to the line width either

- type a new value into the size field, or
- click on the bump icons.

The arrowhead sizes are relative to the line width. Change the line width and the size of the arrowhead also changes.

CLOSING THE SHAPE

You cannot directly create an irregular shape.

Remember a shape is a closed object with no start or end point. Only shapes can be automatically colour filled.

1 Instead, create an open object with the end control point close to the start point. All the control points – except the end point – should be in their required positions.

2 Position the pointer over the end point.

3 Press **and hold down Select**.

4 Drag the end point over the start point and release **Select**. The two points snap together.

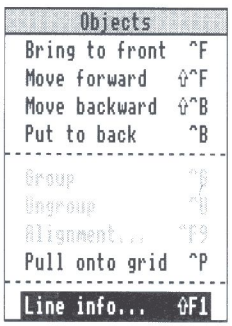
This closes the shape. If there is a current fill colour, the shape is filled with that colour.

CLOSING A FREEHAND SHAPE

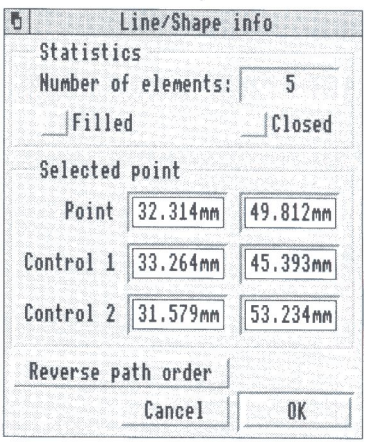
You can directly create a closed shape by ending the line over the start point.

You can also create an open object and then drag the end points together to close it. (This is the same as closing a straight or curve object.)

ACCURATE SIZING AND PLACEMENT OF LINES AND SHAPES



Sometimes you want to accurately position or dimension a line or shape. Use the *Line Info* dialogue box for this. (Keyboard short-cut *Ctrl-Shift-F1*).



Number of elements is the number of line segments or elements in the line or shape.

Filled has three uses:

- To fill an open object. It draws an imaginary line between the end points and fills the enclosed area.
- To unfill an open object. This can happen when importing from other packages.
- To unfill a shape. (Make it transparent.) This is an alternative to setting a *None* fill colour.

Fills are described in a separate section

Closed lets you close a line. It draws a line segment between the two end points to create a shape.

Point is the X & Y co-ordinates of the selected point. *Control 1* and *Control 2* are relevant only to curves and are the co-ordinates of the control handles. They are blank for straight lines.

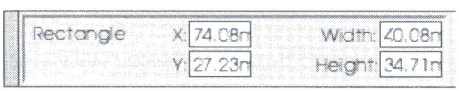
Reverse path order reverses the line so the end point becomes the start point and vice versa.

CREATING A RECTANGLE

With square corners –

Rectangle tool

1 Click on the *Rectangle* tool to select it.
2 Position the pointer where you want one corner to be. (This can be any corner.)
3 Press **and hold down Select**. Drag the pointer diagonally to create the rectangle.
4 When the rectangle is the correct size, release **Select**.



The Info Bar shows the dimensions of the rectangle and its position on the page. To change any of the parameters, type in the new value and press *Return*.

With round corners –

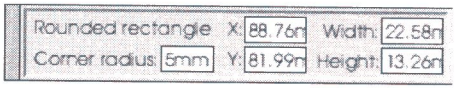
Click on the *Rounded rectangle* tool.

Rounded rectangle tool

Then create a rectangle as described above.

The rectangle has extra control points (*radius points*) where the rounding starts. To increase or decrease the radius, drag any of these radius points.

The Info Bar has an extra field for the corner radius.



CREATING A SQUARE

To create a square rather than a rectangle, hold down *Ctrl* while dragging **Select**. You can create both square-corner and rounded-corner squares this way.

DRAWING AN ELLIPSE

Ellipse tool

This similar to drawing a rectangle

Click on the *Ellipse* tool to select it.

Position the pointer and press **and hold down Select**. Drag the pointer diagonally to create the ellipse.

When the ellipse is the correct size, release **Select**.

CREATING A CIRCLE

To create a circle rather than an ellipse, hold down *Ctrl* while dragging **Select**.

OBJECT HANDLING

This section covers:

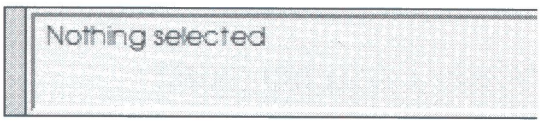
- selecting objects
- moving objects
- duplicating & cloning
- Cut-Copy-Paste
- rotating objects
- deleting objects
- grouping & ungrouping objects
- make, break & join shapes

THE SELECT TOOL

Select tool

You can either:

- click on the Select tool to select it, or
- type *Ctrl-F2*, or
- press the left-hand *Alt* key. This swops to the Select tool while you hold down *Alt*. The previous tool is reselected when you release *Alt*.



SELECTING AN OBJECT

You can:

- Click on any visible part of the object.
- Press and hold down **Select**. Dragging the mouse draws a selection rectangle. When you release **Select** all objects wholly within the selection rectangle are selected. Any objects partly within the selection rectangle are **not** selected.

Note the difference between ArtWorks and Draw – ArtWorks selects only those objects totally within the selection rectangle; Draw also selects objects partly within the rectangle.

Hold down *Shift* to select objects hidden by other objects. By *Shift*-clicking you can step through several overlapping objects.

TO SELECT ADDITIONAL OBJECTS

Select additional objects using **Adjust**.

SELECTING ALL OBJECTS

Type *Ctrl-A*.

DESELECTING AN OBJECT

To deselect all selected objects

Click anywhere on an unused part of the document or type *Ctrl-Z*.

To deselect one object from several

Adjust-click on the object. This deselects that object. Other selected objects remain selected.

IDENTIFYING A SELECTED OBJECT

Selected objects always show their control points.

For most objects the control points appear actually on the objects themselves.

For some objects (such as ellipses and rounded rectangles), the control points appear outside the object.

For text, the control points appear either side of the text. (For more details, see the section on text handling.)

SPLITTING AN OBJECT

Sometimes you want to split an object into two separate parts.

1. If you want to split the object in the middle of a line, create a new control point in the required place.
   If you want to split at an existing control point, click on the control point to select it.
2. Click on the *Split* icon (*Line* tool).

Split icon

If you split a line, there is no visible change. However, if you move the control point, only part of the line moves.

If you split a shape, it changes to being a line. Any fill disappears.

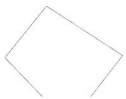
JOINING LINES

Drag two of the end points together. This joins them together.

To create a shape, drag the other two end points together.

Because you join the end points, you can only join lines and not shapes. (Shapes are closed objects and so have no end points.) To join two shapes together you must first split them.

Drag a control point over the end of another line to join them...



...like this

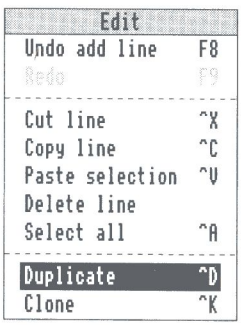
Note:
There is a menu option *Join shapes*. This has an entirely different function.

DUPLICATING AND CLONING

Both these options create a copy of the selected object. The original object is deselected and the duplicate or clone becomes the selected object.

Duplicating

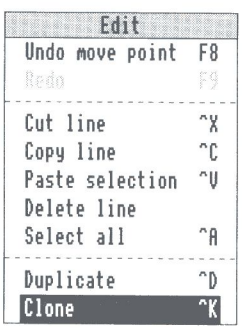
Click on *Duplicate* (or type *Ctrl-D*). The copy is displaced slightly from the original.



Cloning

Click on *Clone* (or type *Ctrl-K*). The copy is placed exactly on top of the original. To create two identical objects exactly in line, horizontally or vertically:

1. clone the object, and
2. move the clone, holding down the *Ctrl* key. This constrains the move.



Cloning is an easy way to create concentric shapes. This example uses:

- an original with a black fill and a 2pt white line, and
- a clone with a None fill and a 1pt black line.

MOVING OBJECTS

In all cases you can move either a single object or several objects. These descriptions refer to *an object* as a convenient way of saying *object or objects.*

To slide an object within the window

1. Select the Select tool.
2. Press and hold down **Select**.
3. As you move the pointer (keep **Select** held down), the object will follow it.
4. Release **Select** when the object is in the required position.

Hold down the *Shift* and left-hand *Alt* keys and you can drag the selected object even if the pointer is not over it. This is useful when you have used *Shift* to select a hidden object.

Hold down *Ctrl* to constrain the move to the constrain angles.

The size of each nudge is set in ArtWorks choices on the Program Menu.

Nudging objects

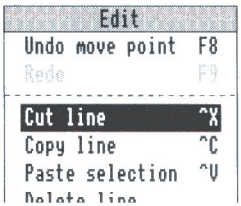
You can move an object a small amount by using the ¬ keys to nudge the object.

Cut-Copy-Paste

This lets you move an object on the same document or between different documents. The procedure is:

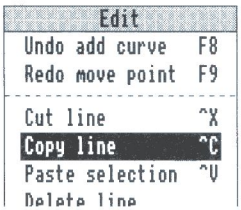
1 Select the object.

2 To remove the object, choose *Cut* (or type *Ctrl-X*).



To copy the object but not remove it, choose *Copy* (or type *Ctrl-C*).

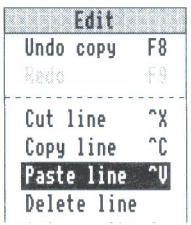
Either option puts the object (or a copy of it) onto the clipboard.



3 Choose *Paste* (or type *Ctrl-V*). This pastes the clipboard contents into the document.

Normally the object is pasted into the centre of the window. If you hold down the *Shift* key while pasting, the object is pasted back with its original X-Y position. This is useful for moving objects between layers (described later).

The object remains on the clipboard so you can paste the same object several times.



REMOVING OBJECTS FROM THE DOCUMENT

You can only remove selected objects. Therefore, if necessary, first select the objects you want to remove.

You can remove objects in two ways:

- cut them to the clipboard, or
- delete them.

Cutting objects

Advantage: you can paste them into a different place or layer.

Disadvantages: the existing contents of the clipboard are overwritten.

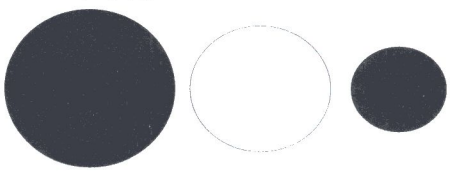
Deleting objects

Advantages: no copy is kept so the clipboard contents are preserved.

MOVING OBJECTS FORWARDS AND BACKWARDS

Complex illustrations usually have objects stacked on top of each other, such as this target:

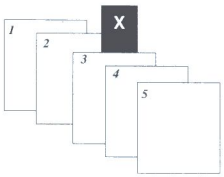
which uses three circles:



To ensure that the circles overlay each other in the correct order, you often need to rearrange their order from front to back. (The front object always covers lower objects; objects always cover other objects which are further back.)

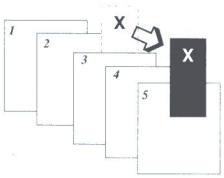
In the Target shown above, the small black circle is the front object, the large black circle is the back object.

In the examples. square 5 is the front object, square 1 is the back object, and the black rectangle **X** is the selected object.

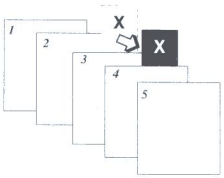


The *Objects* menu gives you four options:

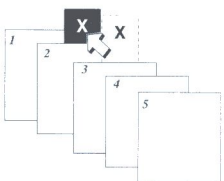
Bring to front (Ctrl -F): this makes the selected object the front object. Therefore it will hide any other object it covers.



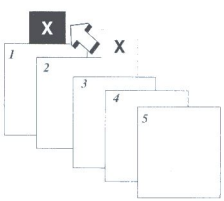
Move forward (Ctrl -Shift-F): this moves the object up a level towards the front rather like climbing a staircase one step at a time.



Move backward (Ctrl -Shift-B): this is the opposite to *Move forward*. It moves the object one level towards the back.



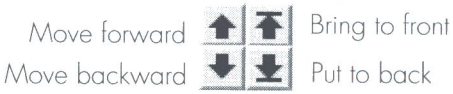
Put to back (Ctrl -B): the opposite to *Bring to front*. It makes the object the rear most object.



You can only move objects forwards and backwards within their layer. You cannot use these commands to move them between layers.

There is more about layers in Blends, Perspective, Enveloping & Layers

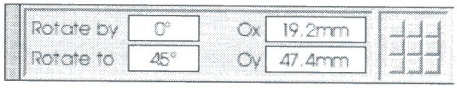
You can also use the Select tool. When this tool is selected, the Info Bar shows front and back icons.



ROTATING OBJECTS

Rotate tool

Click on the Rotate tool to select it.



Rotate tool Info Bar

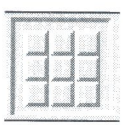
The *rotate origin* — around which the object rotates — initially appears in the centre of the object.

To move the rotate origin

Either

- Position the pointer and click on **Adjust**.

or



- Use the 3x3 matrix on the Info Bar for accurate positioning. These move the rotate origin to the corners, the centre or the side mid-points of the object. The rotate origin aligns with the outer edges of the object. This means that if the object has a thick line applied, the rotate origin can be outside of the bounding box.

To rotate an object using the mouse

Press and hold down **Select**. The object rotates as you move the pointer around the rotate origin. The Info Bar shows the current rotate angle.

Hold down *Ctrl* to restrict rotation to the constrain angles.

To rotate an object using the Info Bar

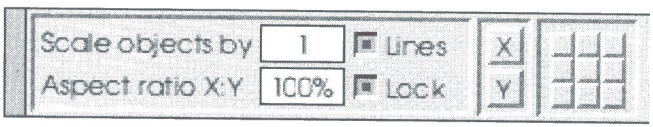
Type an angle into one of the rotate boxes and press *Return*.

Rotate by is a relative rotation from the current position. The angle is updated as you rotate an object.

Rotate to is the rotation from the original position of the object. The angle is *Many* when you have several objects selected that are rotated by different angles.

SCALING OBJECTS

Click on the Scale tool to select it.



Scale tool Info Bar

Scale tool

The *scale origin* — around which the object scales — initially appears in the centre of the object.

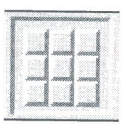
To move the scale origin

Either

- Position the pointer and click on **Adjust**.

or

- Use the 3x3 matrix on the Info Bar for accurate positioning. These move the scale point to the corners, the centre or the side mid-points of the object. The scale origin aligns with the outer edges of the object. This means that if the object has a thick line width, the scale origin can be outside of the bounding box.



To scale an object using the mouse

Press and hold down **Select**. The object scales as you move the pointer diagonally. The Info Bar shows the current scaling. Hold down *Ctrl* if you want to scale only horizontally or vertically or along the constrain angles.

To scale an object using the Info Bar

Type a scale into *Scale objects by* and press *Return*.

Scalings below 1 reduce the object. **0.5** halves the size of the object.

Scalings above 1 enlarge the object. **2** doubles the object size.

Aspect ratio and the Lock button

The aspect ratio is the scaling of height to width. A ratio below 100% makes the object narrower relative to the height; over 100% makes the object wider.

With *Lock* set, the aspect ratio remains constant as you scale the object using **Select**. With *Lock* unset, you can change the aspect ratio as you scale. (Holding down Ctrl has the same effect as setting *Lock*.)

The Lines button

With *Lines* set, scaling the object also scales the line widths.

With *Lines* unset, the line width does not change during scaling.

Flip horizontally and vertically

Click on the *Y* button to flip the object vertically around the rotate origin. (Flip around the horizontal axis.) The scale and aspect ratio do not change – the object just flips.

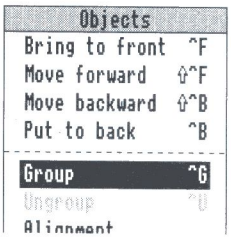
Click on the *X* button to flip the object horizontally. (Flip around the vertical axis.)

GROUPING AND UNGROUPING OBJECTS

You will often create complex shapes from several different objects. The *Group* menu option lets you lock those objects together to form what appears as a single object. You can then select the grouped objects and copy, rescale, move or perform any other operation on the entire group.

To create a group

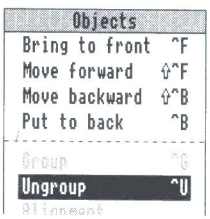
1 Select all the objects you want in the group.
2 Click on *Group* (or type *Ctrl-G*) to create the group.



Ungrouping objects

1 Select the group,
2 Click on *Ungroup* (or type *Ctrl-U*).

All the individual objects in the group remain selected.



To add more objects to a group

1 Select the group,
2 Click on *Ungroup*,
3 Select the extra objects,
4 Click on *Group*.

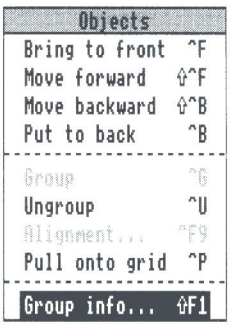
You can also incorporate a group into a second group by omitting step 2. ArtWorks remembers the original grouping information. If you later ungroup the objects, the original group remains.

Removing objects from a group

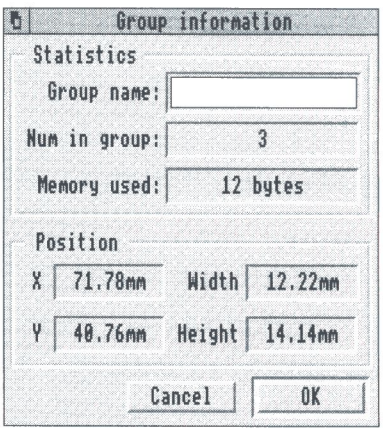
1 Ungroup the objects,
2 **Adjust** click on the objects you want to remove. This deselects them – the other objects remain selected.

You can then click on *Group* to regroup the remaining objects.

Group information



This dialogue box gives you information about the current group. You can use it to place and dimension the group.



You can also give the group a name. This lets you identify the function of a particular group.

For more information on layers see Blends, Perspective, Enveloping & Layers

Groups and layers

If all the objects in the group are in one layer, the group is created in that layer. The group is at the level of the highest member of the group. (That is, the group does not automatically become the front object as it would in say Draw.)

If the group is in more than one layer, the group is created in the current layer. The group is the front object in that layer. (It covers anything it overlaps.)

MAKE, BREAK & JOIN SHAPES

Make shapes

Keyboard short-cut *Ctrl-M*.

Use this to convert shapes created by the Rectangle, Ellipse and Text tools into paths. This lets you manipulate them as normal shapes.

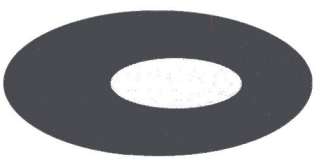
Join shapes

Keyboard short-cut *Ctrl-I*.

Use this to create holes in solid shapes. For example, to create a doughnut shape:

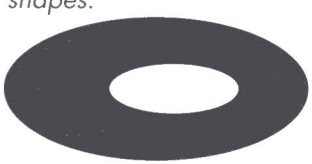
1 Create an ellipse. (You can use either the Curve tool or the Ellipse tool.)

2 Create a second ellipse inside the first. (We've changed the colour of the second ellipse to make it obvious.)



3 Select both.

4 Choose *Join shapes*.

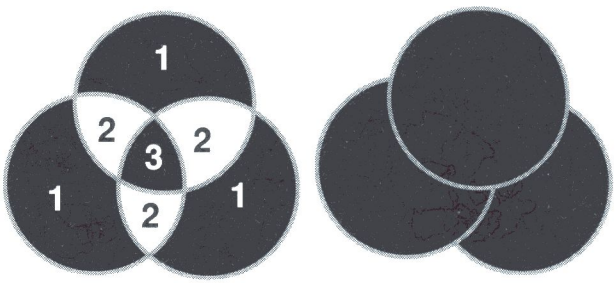


This creates a single shape with a transparent hole in the centre.

These rules apply where several shapes overlay:

- All the shapes take the line attributes and fill colour of the top shape.
- An even number of shapes creates a transparent area.
- An odd number of shapes creates a solid area.

The numbers on this example of three circles show how many shapes overlay in each area:



The joined shape on the left shows the number of segments which overlap; on the right are the original three circles shown unjoined.

WINDING RULES

These govern filling a shape that overlaps itself. There are two options: *non-zero*, which is used on some other computers, and *even-odd*, which is the Acorn standard. You may need to change the winding rule in special cases.

When exporting files to other computers, the winding rule should be automatically corrected. If, in a particular case, the result is not as you expect, you can use this option to change the rule.

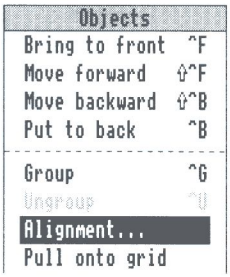
The same object with non-zero (left) and even-odd (right) winding rules.

Break shapes

Keyboard short-cut *Ctrl-L*

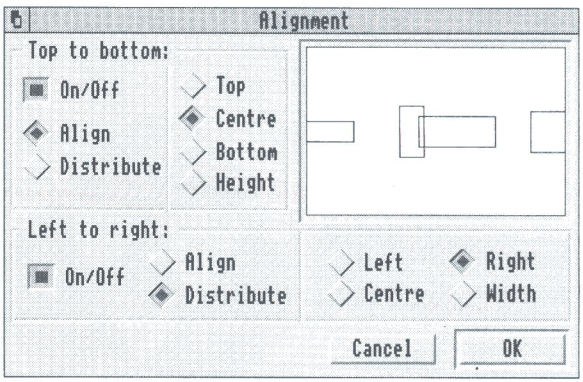
This breaks a joined shape into the original separate parts. You can break several joined shapes in one operation.

This option is greyed whenever objects other than joined shapes are selected.



ALIGNMENT

This lets you accurately align or distribute two or more objects. Choose *Alignment...* or type *Ctrl-F9*.



The small diagram on the dialogue box shows you the effect of selecting each option. The selected objects in the document do not change until you click on *OK*.

Align

All the align options act in a similar way. For brevity, only the top-to-bottom *Centre* option is described.

1 Click on the *On/Off* and *Align* buttons to select them.
2 Click on *Centre*.
3 Click on *OK*.

The selected objects move vertically to align along their centre lines. If Left-to-right is *Off* the objects do not move horizontally.

If you select *Align*, the *Height* and *Width* button have not effect. (They are used only for distributes.)

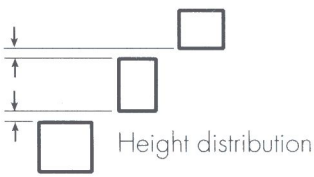
Distribute

Again all the distribute options work in a similar way. The examples show how the different *Top to bottom* options align objects:

- Top distribution. The tops of the objects are evenly spaced. Bottom distribution is the inverse – the bottom of the objects are evenly spaced.

- Centre distribution. The centres of the objects are evenly spaced.

- Height distribution. The objects are evenly spaced from each other.



The *Left to right* option are similar but operate in the horizontal plane.

SPRITE HANDLING

This section covers

- the sprite pool
- importing sprites
- using sprites

WHAT IS A SPRITE?

Sprites (also called bit-maps) are images made up of individual pixels. They are produced by applications such as *!Paint* or from scanners and digitisers. ArtWorks documents can incorporate sprites and perform limited editing on them. Draw format files can include sprites as can some EPS files.

There are some points to note about sprites:

- Sprites can be very large. A high-definition scanned sprite can require several megabytes of memory.
- RISC OS 2 cannot rotate sprites. ArtWorks and some applications such as Impression include special software for sprite rotation but many applications such as Draw will always show sprites unrotated.

  RISC OS 3 can rotate sprites.
- Stored within the sprite is information about the screen mode it was created in. If your computer cannot display that screen mode, it cannot display the sprite. This can happen in two ways:

– Transferring a sprite between two machines. The A540 and A5000 have extra screen modes such as mode 31 that are not available on 300 and 400 series Archimedes. (Mode 31 is our recommended mode for the multi-sync monitors on the A540 or A5000.)

– *!NewModes* or other mode modules gives you extra screen modes. Forget to load the module and sprites created in these modes will be invisible.

THE SPRITE POOL

Sprites are stored in a separate area of memory called the Sprite Pool. You can look at which sprites are currently in the pool and delete, copy or rename them.

Each document has its own sprite pool.

There are several advantages to having a pool:

- If you use the same sprite several times in a document, ArtWorks only needs to store one copy. This saves memory.
- You can import several sprites in one operation. As you need the sprites in the document, you can fetch them from the pool.
- You can export some or all of the sprites from a document in one operation.

IMPORTING SPRITES...

You can drop a sprite:

- onto an ArtWorks window, or
- onto the ArtWorks icon on the icon bar, or
- into a document's sprite pool.

... onto an ArtWorks window

This puts the sprite into that document's sprite pool. The sprite appears in the window where you dropped it. It becomes the selected object.

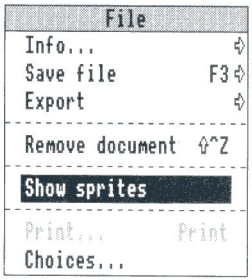
...onto the ArtWorks icon

This creates a new document and opens a window onto the document. The sprite is dropped into the sprite pool and appears in the window.

... directly into a sprite pool

This adds the sprite to the pool but does not display it on screen.

DISPLAYING THE SPRITE POOL



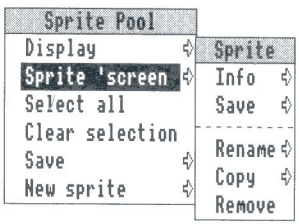
Click on *Show sprites*. This option is greyed unless the document contains sprites and hence has a sprite pool.

This displays the sprite pool. This looks and operates much like a conventional directory window. The main difference is that you can change the order of the icons.

To move a sprite icon

1 Move the pointer over the sprite icon.
2 Press and hold down **Select**.
3 Drag the sprite to a suitable position in the directory window.

THE SPRITE POOL MENU



Click **Menu** over the sprite pool directory window. Many of the options are similar to ordinary directory window options.

Display

Large icons, *Small icons* and *Full info* are identical to commands in ordinary directory windows.

Selection/sprite name

If you have several sprites selected, this option shows *Selection*.

If you only have one sprite selected, the option shows the sprite name.

Move over the arrow to display a submenu:

Info

This displays information about the sprite or selection.

Save

This lets you save the sprite or selection.

Rename

This lets you rename a sprite.

See Document Handling for details of using Save boxes.

Copy

This lets you create a copy of a sprite.

Remove

This removes the sprite or selection. **It is the only way to remove sprites from an ArtWorks document**. You can only remove unused sprites.

Select all

This selects all the sprites in the pool.

Clear selection

This deselects any selected sprites.

Save

See Document Handling for details of using Save boxes.

This lets you save the entire sprite pool to disc or another ArtWorks document. It displays a conventional Save box.

New sprite

This option creates a new, blank sprite. The description of *!Paint* in the *Welcome Guide* supplied with your computer details this dialogue box. At present this option has limited use but is included for possible future expansion.

BLENDS, PERSPECTIVE, ENVELOPING & LAYERS

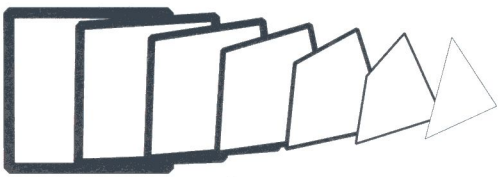
This section covers

- the blend tool
- the perspective tool
- the envelope tool
- using layers

BLENDS

Also known as *interpolation*, *in-betweening*, *tweening* or *morphing*.

This operation blends one object into another by a series of intermediate objects.



A five-stage blend of a square into a triangle

Blends have several different uses. This section firstly describes some of the uses and then using the Blend tool.

Uses of blends

There are several different uses for this tool:

- To create a repeating design, such as a series of rules:

  or a pattern:

  For this you create the start and end objects and then blend between them.
- To transform one object into another. The square to triangle blend (above) is an example of this.

  By using more intermediate stages you can create very realistic shading and highlighting effects.

The blend is not just between the shapes of the objects but also other attributes such as line thickness and line and fill colours.

ArtWorks calculates the blend information whenever displaying it on screen or printing. This means that blends require very little memory space.

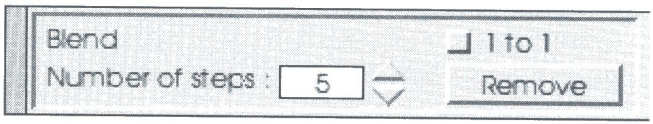
Blends and the WYSIWYG knob

A complex blend can slow screen redraws. (This slowness is relative to the normal quick response – even at its slowest, redraws are still faster then normal redraws in many other drawing packages.)

The WYSIWYG control can speed up redraws:

- At **0** only the start and end objects appear. The intermediate objects are not shown.
- At **2** the outlines of the intermediate objects are drawn.
- At **6** the colours and line thickness of intermediate objects are drawn.
- At **11** all the information is shown anti-aliased.

Using the Blend tool



Blend tool Info Bar

Set the WYSIWYG control to 6 or above to see the blend.

You can only add control points to a blended object that already has a selected control point. If necessary, click on an existing control point to select it before trying to add a new control point.

Before applying the blend, make sure the objects you want to blend between have the correct colours, line widths and so on. After you have applied the blend, you can change the shape of the objects by adding, deleting and moving colour points. But for other changes you must remove the blend, make the change, and reapply the blend. (To remove a blend click on the *Remove* button.)

1 Select the Blend tool.
2 Move the pointer over a visible part of the start object.
3 Press and hold down **Select**.
4 Drag the pointer over the end object. As you drag the pointer a "blend line" appears.
5 When over a visible part of the end object, release **Select**.

Blend tool

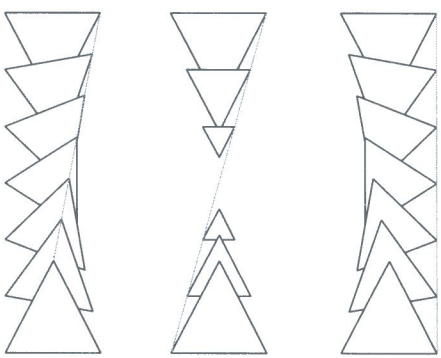
Number of steps is the number of intermediate stages in the blend. At lower settings the individual steps are apparent. This is useful for object transforms. At higher settings the steps merge together. This is more suitable for highlight effects.

The two objects can have different numbers of control points and can be different types. (For example, shapes to lines.) You cannot use sprites in blends.

When ArtWorks blends, it has to have a 'start' point on one object that maps onto an equivalent 'start' point on the other object. If you create a blend by dragging from the filled interior of one shape to the other, then ArtWorks will automatically choose the bottom left control points to match. However, you can force a blend to use any control point as the starting point by dragging exactly from one control point to another.

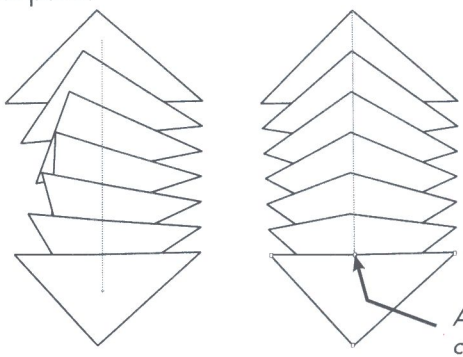
For object-to-object blends the blend line is coloured black.

When blending between control points, it is coloured red.



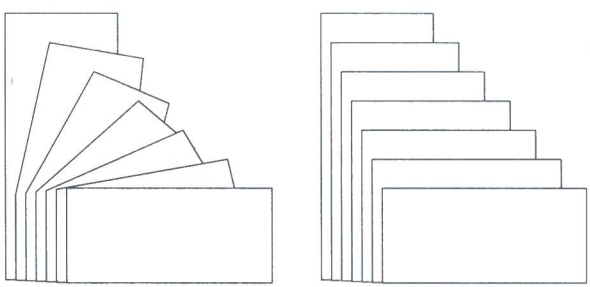
Blending between different control points gives different blend patterns.

A second way to force a blend is adding control points to one object. The left-hand example is a blend between two triangles. The right-hand example has an extra control point in the lower triangle. The blend was then made to that control point.

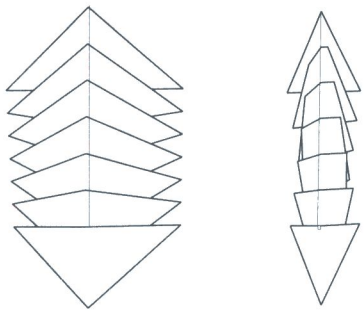


A Third way is using the *1 to 1* button. You can only use this if the two objects have the same number of control points. Usually ArtWorks adds or removes points as necessary to transform one shape into another. When blending with shapes that have the same number of points (such as copies or duplicates) this can produce strange results. In this situation, the *1 to 1* button prevents extra control points being added. You can still control the start points by dragging exactly between control points as previously described.

The left-hand example is a normal blend between the rectangles. The right-hand example uses 1 to 1.

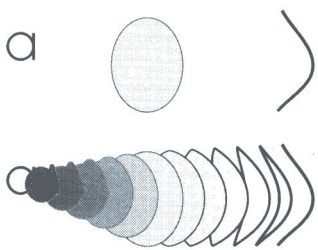


The exact shape of the two blend objects can affect the blend. The two examples have an extra control point in the lower triangle.



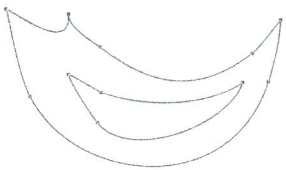
Multiple blends

You are not limited to blending between only two objects. ArtWorks can blend between several objects. The original three objects are at the top; the resultant blends below. (It also shows blending between different types of object.)

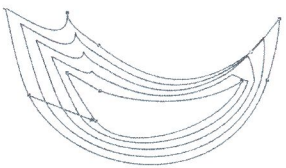


Producing highlight effects

Complex blends can be used for producing very effective highlights. Typically you blend from one shape to another smaller highlight shape inside. One of the most powerful features of ArtWorks is that it allows blends from shapes with dissimilar numbers of points. However, blends between objects with sharp corners can produce unwanted twists in the blend. This can usually be overcome by blending between control points. For example, these are the basic shapes:

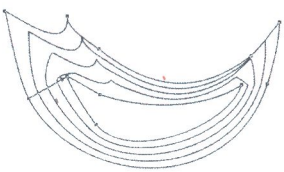


Blending from the edge of the outer shape to any edge on the inner shape (but not on a control point) would produce this:

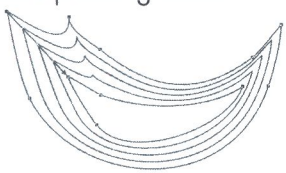


Which is exactly the same as dragging from the lower left contol points. (ArtWorks normally blends between the lower left corners.) Note the twist in the top right of the blend.

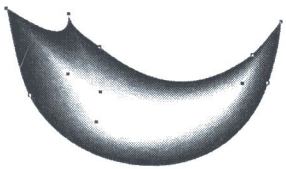
Dragging to a different point doesn't produce any better result.



Dragging from the sharp point to the desired other point does produce a more pleasing blend:



And this is the final blend from solid black to solid white.



Blends and PostScript files

Blends must be turned into individual objects for outputting to PostScript. If you use a large number of blend steps, this can create large files (several megabytes in some cases). If necessary reduce the number of blend steps.

Blends and Make shapes

The *Make Shapes* menu option can be used to 'expand' a blend into its constituent parts. Doing this means it occupies considerably more memory, and also means that the blend, in effect, becomes set in concrete - in order to change the blend you will have to re-blend from the start to the end shape.

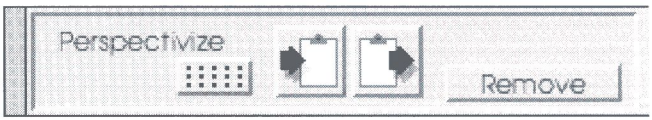
Blends and the colour models

The end objects in a blend should preferably use the same colour model. (Which can be any of the three colour models.) If the objects use different models you may see a noticeable colour step during the blend. This is most likely to occur with blends between HSV and CMYK.

See Colour handling for more details of the colour models

PERSPECTIVE

Perspective tool



Perspective tool Info Bar

The Perspective tool lets you distort shapes to give an impression of depth.

1 Select the object or selection of objects,
2 click on the Perspective tool.

ArtWorks draws a rectangle around the object or selection. You can drag the control points at each corner of the rectangle to produce the perspective effect.

As you reduce the size of the sides of the rectangle, you see a 'vanishing point' target. This is similar to vanishing points in conventional drawing and let you get consistent perspective.

Using vanishing points

Perspectivise an object. This will be used as your master object.

Perspectivise other objects. Select both the master object and the other objects. Each object has its own set of vanishing point targets. By aligning the various targets with the master set, you achieve consistent perspective.

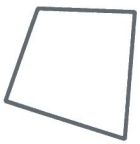
The perspective grid

This lets you see the amount of distortion of an object. With no distortion the grid is evenly spaced. As you distort the shape the grid points move closer together.

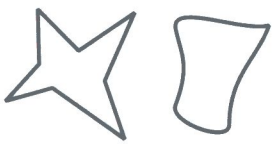
This grid is only used for perspective and enveloping. It is separate from the document grid that you can snap objects to.

Using moulds

You can create a perspective mould, copy it to the clipboard and then use it to perspectivise other objects. The mould must have four straight sides:



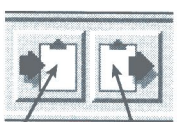
This is acceptable as a mould



These are not acceptable: the object on the left has too many sides (must be four); the object on the right has curved sides (must be straight).

Squares and rectangles produced by the Rectangle tool cannot be used directly. (They are a special type of object and not true shapes.) Click on *Make shapes* to convert them to shapes first.

1 Copy or cut the mould to the clipboard.
2 Select the perspectivised object.
3 Pull the mould off the clipboard using the Info Bar.

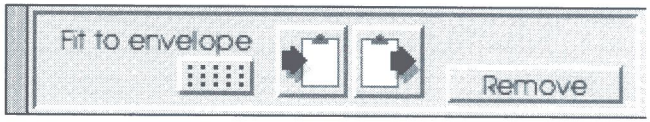


Click here to copy a mould to the clipboard

Click here to pull a mould off the clipboard

Envelope tool

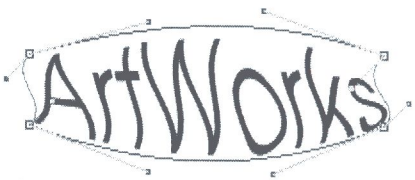
ENVELOPING



Envelope tool Info Bar

The Envelope tool lets you distort shapes in a wide variety of ways. The effect is similar to a rubber sheet or balloon that you can stretch in any direction.

Sample enveloped text



The envelope for this example

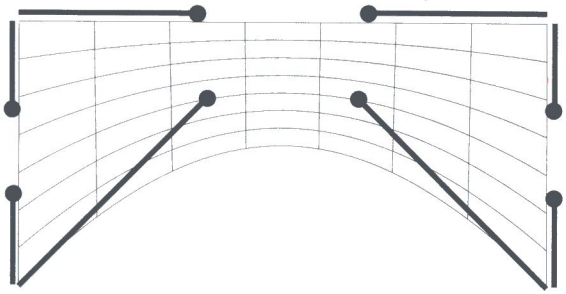
Using this tool is similar to the *Perspective* tool. That is:

1 select the shape, then
2 click on the *Envelope* tool.

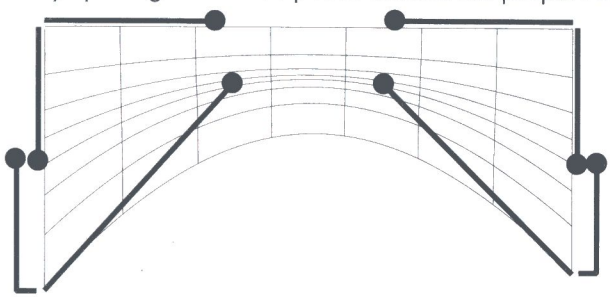
Refer to *Perspective* for details of the options on the Info Bar.

You can drag any of the corner points or radius points of the envelope.

These following two examples use an evenly spaced grid as the original shape. The thick lines represent the radius points. (On the actual drawing the radius points align with the top or sides of the grid. For clarity, they are shown here moved away from the grid.) Evenly spacing the radius points maintains the proportions of the shape:



Unevenly spacing the radius points distorts the proportions:



Enveloping moulds

These are used in the same way as perspective moulds. Enveloping moulds must have four sides which can be curved or straight. (Moulds for perspectives must have straight sides.)

Squares, rectangles, ellipses and circles cannot be used directly. (They are a special type of object and not true shapes.) Click on *Make shapes* to convert them to shapes first.

LAYERS

Layers behave exactly as the name suggests. They act like a series of transparent sheets laid on each other. Opaque objects on one layer obscure anything underneath them on lower layers.

Features of layers – you can:

- Permit editing of all layers or restrict it to only the current layer. (The current layer is the currently selected layer. Any objects you create appear on the current layer.)
- Show as many or as few layers as you wish.
- Change the order of layers, front to back.
- Name layers for future reference.

They have two main uses:

- Acting as overlays.

  You can create, for example, a floor plan of a building. Separate layers can then show the telephone points, fire-alarm zones, what each room is used for and so on.
- A help when creating complex illustrations.

  By restricting editing to only the current layer, you can guard against accidentally changing objects on the other layers.

  By showing only the layer or layers you are working on, you can considerably speed up redraws.

  By putting guide lines and outlines or sprites on background layers (which are non-printing) you can align objects quickly and easily.

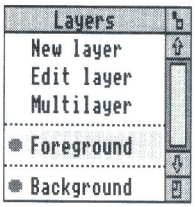
Initially each document has two layers: called **foreground** and **background**. **Foreground** is the current layer. This is the only layer used in simple drawings.

Controlling layers

The Info Bar shows the name of the current layer.

Click on the arrow to display a menu

New layer, *Edit layer* and *Multilayer* are described later.



The bottom two parts of the menu lists the layers. (The illustration shows two layers, *Foreground* and *Background*.) *Foreground*, as the name suggests, is in the foreground section of the menu. Only foreground layers can be printed. *Background* is in the background section. You cannot print layers in this section.

The current layer has a yellow background (**Foreground** in the illustration). Visible layers (those shown on screen) have a solid dot to their left. When you print the document you have the option to print either all foreground layers or only visible foreground layers.

Changing the current layer

Remember the current layer has a yellow background.

Click on the name of the layer you want as the new current layer.

Showing and hiding layers

Click on the dot to the left of the name.

A solid dot denotes a visible layer. (You can see it.)

A hollow dot denotes a hidden layer. (It's invisible.)

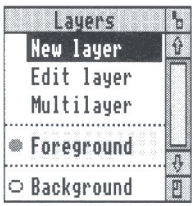
Restricting selection to the current layer

The *Multilayer* option controls this.

When the option is ticked, you can select objects on any layer.

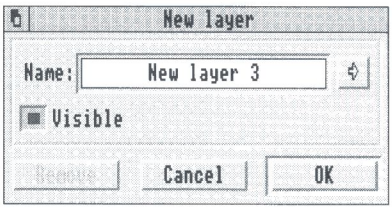
When it is unticked, you can only select objects on the current layer. Thus objects on other layers are effectively locked in place. You cannot accidentally move them.

Creating new layers



Click on *New layer.*

This opens a dialogue box:



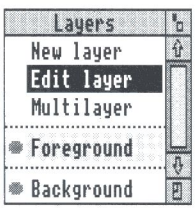
You can change the name to denote the layer's use.

The *Visible* button duplicates the function of the dots on the Layers menu.

Click on *OK* to create the new layer. The new layer becomes the current layer.
Click on *Cancel* to discard the new layer. It is not created.

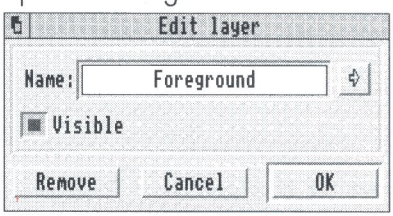
Remove and the arrow to the right of the name have no use when creating a layer. Clicking on either has no effect.

Editing a layer



Click on *Edit layer.*

This opens a dialogue box:



To edit a different layer, click on the arrow to the right of the name. This displays a menu of the layers.

You can change the name in the *Name* field.

The *Visible* button duplicates the function of the dots on the Layers menu.

Click on *OK* to implement any changes made.

Click on *Cancel* to discard any changes.

Click on *Remove* to remove the layer from the document.

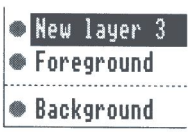
Changing the order of layers

The top layer on the menu is the top layer on the drawing. (Opaque objects cover anything underneath them on lower layers.)

You can change the order of the layers.

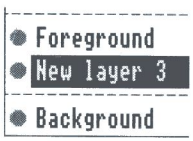
To move **New layer 3**:

1 Hold down **Adjust**.



2 Drag the name up or down the menu. The blue outline shows its position.

3 Drop it in the required position.



TEXT HANDLING

This section covers:

- entering text
- editing text

Related sections of this manual:

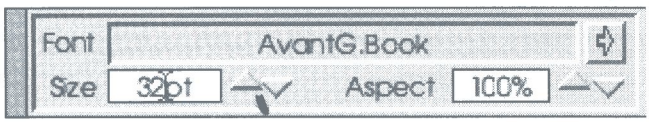
- scaling objects
- rotating objects
- colour handling

For general information on fonts and font sizes, see the appendix *About fonts*.

Note:
Blocks of text are best handled by DTP packages such as Impression. You can export ArtWorks files to such packages as Draw files.

THE TEXT TOOL AND INFO BAR

Use the text tool to enter or edit text.



Text tool Info Bar

Text tool

ENTERING TEXT

Position the pointer where you want to enter text and click **Select**. A red cursor appears where you clicked and you can now start typing on the keyboard.

If you make a mistake, you can use the delete and cursor keys in the usual way.

Pressing *Return* completes that line and starts a new text object below it.

SELECTING TEXT

Selecting text is similar to selecting any other object. That is, you click on any part of the characters. Note that clicking on the spaces between the characters will not select the text. You have to click on the characters themselves.

Selected text is displayed within a rectangular bounding box.

EDITING TEXT

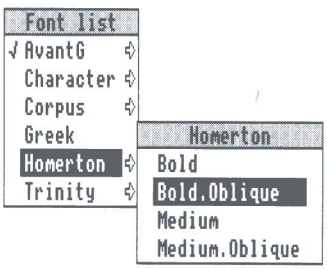
First you must place the text cursor in the text:

1 select the text,
2 position the pointer where you want to place the text cursor (between two characters or a character and the edge of the bounding box,
3 click **Select**.

You can then edit the text. You can edit text even after rotation or colour filling.

Editing is quickest if the text has no line colour and has a flat fill.

CHANGING THE FONT



Click **Menu** on the Info Bar. This displays a hierarchical menu of available fonts. The first menu shows the available font families.

Slide over the arrow to the right of the name to show the variants of that font. Click on a variant name to select it. (In the illustration the *Bold.Oblique* variant of the *Homerton* family is about to be selected.)

CHANGING THE FONT SIZE

Font size describes the height of the characters. For more information, refer to the appendix *About fonts*.

There are three ways to change the font size:

- type a new value into the *Size* editable field on the Info Bar, or
- click on the bump icons to the right of the editable field, or
- use the Scaling tool.

CHANGING THE ASPECT RATIO

The aspect ratio is the ratio between the height and width of the text. Ratios over 100% make the text wider than normal, under 100% make the text narrower.

To change the aspect ratio:

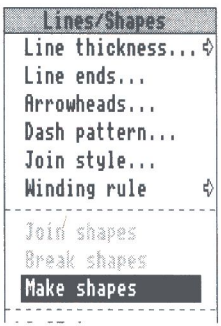
- type a new value into the *Aspect* editable field on the Info Bar, or
- click on the bump icons to the right of the editable field, or
- use the Scaling tool.

CHANGING TEXT INTO SHAPES

You may want to convert some text into shapes for further manipulation. To do this:

1. select the text,
2. choose *Make shapes* on the *Lines/Shapes* menu.

This converts the individual characters into a series of lines and curves which you can individually manipulate. You cannot edit converted characters as text. Make sure the text is correct before you convert it.



KERNING

Kerning lets you alter the space between characters and their horizontal or vertical alignment.

RISC OS 3 can automatically compensate for imbalance between character pairs if the font has an auto-kerning table. (Many fonts don't have these tables.)

Small changes in kerning are useful to balance characters pairs. For example, without kerning

AWL

looks unbalanced with more space between **A** & **W** than between **W** & **L**.

By changing the kerning between the characters pairs you achieve balance.

AWL AWL

On the left, reduced kerning between A & W; on the right, increased kerning between W & L

Larger changes are useful for effects:

Art
Works

was created from a single line of text with heavy vertical and horizontal kerning between **t** & **W**. (Also **W** & **o** are kerned closer together for balance.) The text remains as text and you can still edit it.

Horizontal kerning

Position the cursor between the two characters and type:

Ctrl-E to expand the space between characters, or

Ctrl-R to reduce the space.

An EM is the width of the capital letter M in the current font and font size. It is therefore a relative measurement and not a fixed value.

Each key press changes the kerning by $^{50}/_{1000ths}$ of an em.

Vertical kerning

This is similar to horizontal kerning. Type:

Ctrl-Y to kern upwards, or

Ctrl-J to kern downwards.

Characters to the right of the kern move up or down. To kern only the middle of a line use a second kern as in this example:

KERNING

Kern down after E; kern up after I

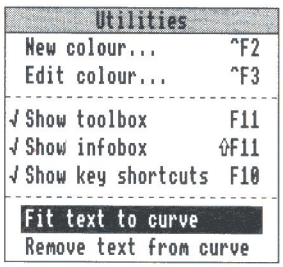
SWOP CASE

ArtWorks provides an easy way to change characters between upper-case (capitals) and lower-case. Position the cursor before the character you want to change and type *Ctrl-S*.

TEXT AROUND A CURVE

This fits a line of text to an arbitrary curved line.

1 Select the line of text and the curved line.
2 Click on *Fit text to curve* in the Utilities menu. (Keyboard short-cut *Ctrl-Shift-T*)



If you want the line to be invisible, set the line colour to *None*.

You cannot edit the text while curved but you can remove the text from the curve, edit it and re-fit it to the curve. You can edit the curve at any time. Click on *Remove text from curve* or type *Ctrl-Shift-R*.

COLOUR HANDLING

This section covers:

- using the colour models
- using the colour editor

Related sections of this manual:

- colour fills

THE COLOUR MODELS

ArtWorks gives you a choice of three colour models:

- RGB (Red-Green-Blue),
- CMYK (Cyan-Magenta-Yellow-Key),
- HSV (Hue-Saturation-Value).

You can create exactly the same colour using any of the colour models. However, different models are easier to use in particular applications.

The colours are stored within ArtWorks documents in 24-bit format (rather than the normal 8-bits). This gives you better control over colour definition. 24-bits gives you 16 million possible colours; 8-bits only 256 colours.

To extend the range of colours displayed on the screen, ArtWorks uses dithering to give the illusion of the full range of colours rather than the limited range available normally.

RGB (Red-Green-Blue)

RGB is the model used by the computer screen to display colours.

CMYK (Cyan-Magenta-Yellow-Key)

This is the colour model used by commercial printers. (CMYK are the colours of the four inks used in full-colour printing.) The Key colour – Black – reinforces dark colours and grey shades which appear muddy if printed using only CMY.

HSV (Hue-Saturation-Value)

This colour model is familiar to artists. **Hue** is the pure pigment. **Saturation** is the amount of white added – the smaller the Saturation, the greater the amount of added white. **Value** is the brightness of the colour or, put another way, the amount of added black. So the Saturation and Value produce all the shades and tones of the basic Hue.

Colour models and Blends

The end objects in a blend should preferably use the same colour model. (Which can be any of the three colour models.) If the objects use different models you may see a noticeable colour step during the blend. This is most likely to occur with blends between HSV and CMYK.

PROCESS COLOURS, SPOT COLOURS & TINTS

Process colours

These are the four colours of the CMYK colour model (cyan, magenta, yellow and black). Commercial printers use these four inks to produce other colours.

Most colours (or a close approximation) can be printed using CMYK. A few (such as turquoise) cannot be accurately reproduced.

Spot colours

These are used in two ways:

- Often you don't require the full range of colours available from process colours. You might just want two or three specific colours. Then using spot colours is an economical way to print work.
- Sometimes you want a specific colour which cannot be reproduced accurately from process colours. An example is the acorn symbol used by Acorn Computers. This is a specific shade of green which appears dull when printed by process colours.

Using a mixture of spot and process colours in work that is to be commercially printed provides maximum flexibility. However, the printing costs rise rapidly as you use more spot colours.

Tints

These extend the range of colours available from process or spot colours. Tints are created by printing dots of the base colour instead of a solid colour. A 100% tint is solid colour; 0% tint no colour. Hence, a 75% black tint gives a dark grey, a 25% black tint a light grey. Similarly a 50% red tint gives pink.

THE PRIMARY PALETTE

This is an option on the Program Menu. Use this with 16 colour screen modes. It has no benefits in 256 colour modes.

The standard Acorn 16 colour palette doesn't show all the primary colours correctly. In particular, *Red* and *Magenta* appear as the same colour on screen. As a result, dithering (which mixes these primary colours) often shows a colour shift.

ArtWorks provides a replacement 16 colour palette. Click on *Primary palette* to select it. Some screen icons will change to unfamiliar colours but you can now see pure cyan, magenta and yellow.

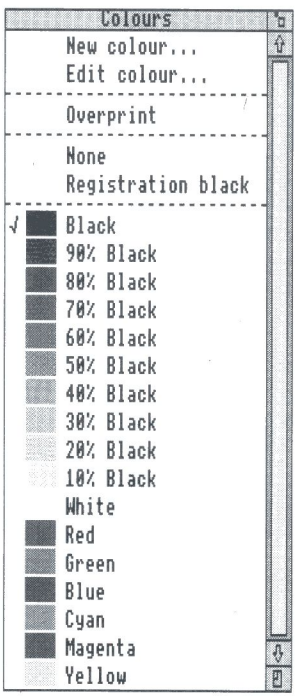
To revert to the standard Acorn palette choose *Default* in the Palette menu or use FlipTop.

COLOURS ON THE SCREEN AND ON THE PRINTER

One problem with computer screens is that their colours do not match the available colours on a printer. Screens **emit** combinations of red, green and blue. The brightness control has a dramatic effect on displayed colours. Printers **reflect** combinations of cyan, magenta, yellow and black. Also, for both, the component colours are never exactly matched. As an example, a dark blue colour on screen usually appears as a purple shade when printed.

THE COLOUR MENU

This is a menu of the available colours in a document. Click on a colour panel on the information bar to display it.



New colour... and *Edit colour...* call the Colour Editor (described later). *Overprint* is also described later.

None selects transparent.

Registration black is a special colour used for crop marks and alignment targets when preparing separations. You cannot edit it. For more information refer to the *Printing* section.

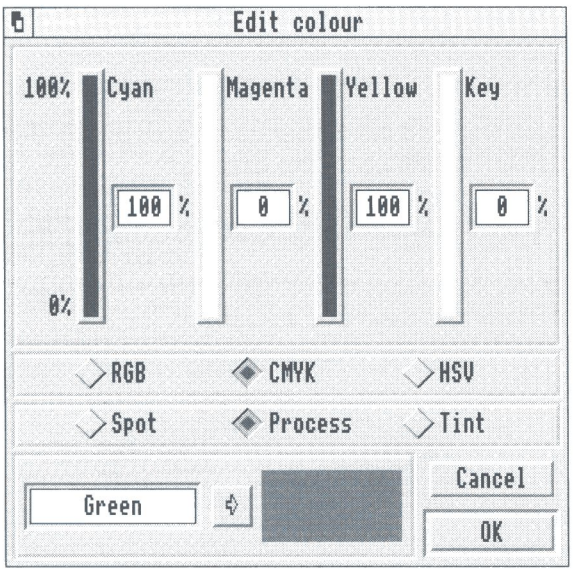
The colours in the main section of the menu can be edited or deleted. Any new colours you create appear in this section.

Choose a colour in this area (or *None* or *Registration black*) to change the current fill or line colour.

THE COLOUR EDITOR

This is used to edit existing colours. To display this:

- choose *Edit colour* on the colour menu to edit an existing colour,
- choose *New colour* on the colour menu to create a new colour,
- use the keyboard short-cut of *Ctrl-F3* for Edit colour,
- Use the keyboard short-cut of *Ctrl-F2* for New colour.



The Colour Editor

Current colour

This shows the name and colour of the current colour. (The accuracy of the colour shown is limited by the palette of the screen mode.)

The colour swatch panel is in two halves:

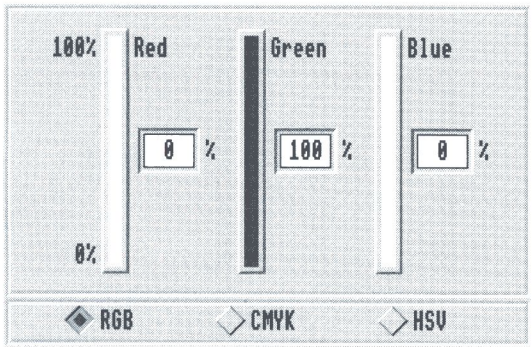
- the unedited colour is shown on the right,
- the edited colour is shown on the left.

This lets you compare the old and new colours.

When you first load the Colour Editor both panels show the same colour. (More about this later.)

This defines the type of colour. (The differences between the type of colour are described earlier.)

RGB colour model



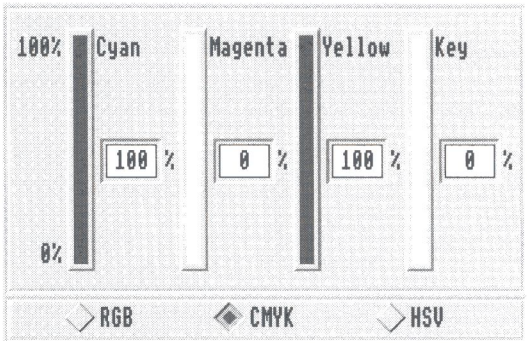
To change the colour either:

- Drag the coloured bar in the slider up or down. As you move the slider, the numeric value appears in the editable box to the right.
- Type a numeric value (**0-100**%) into the editable box and press *Return*.

As the colour changes, left-hand-side of the colour swatch panel shows the edited colour. (Limited by the available screen palette and dithering.)

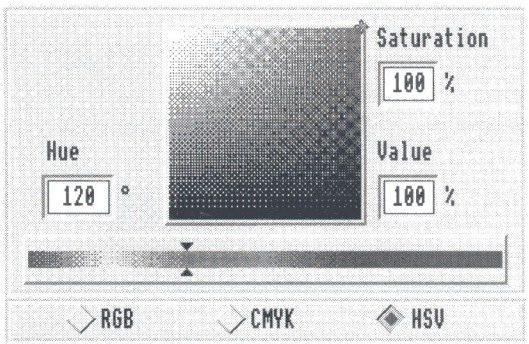
The colour swatch panel; on the left is the edited colour (40% grey); on the right the original colour (100% black)

CMYK colour model



Editing this is similar to the RGB colour model. As explained previously, some colours (such as dark blue) will not be printed exactly as they appear on screen.

HSV colour model



Although this appears complicated, many people find HSV the easiest and most intuitive of the colour models.

Select the basic colour (*Hue*) from the colour strip. This represents the edge of a circle of colours so red is at either end. (0° on a circle is the same as 360°.) You can also type an angle into the **Hue** editable field.

The panel above the colour strip selects the Saturation and Value. (You can also type into the editable fields.)

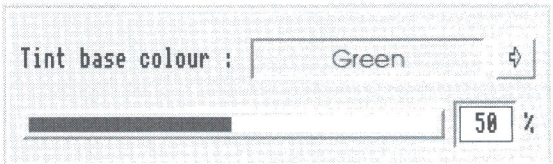
Saturation is the amount of basic colour. White is added to reduce the saturation. On the left of the panel is no colour (*0%*). On the right is pure colour (*100%*).

Value is the brightness of the colour. Black is added to reduce the brightness. *100%* (at the top of the panel) is no added black; *0%* (at the bottom) is total black.

Drag the target across the panel to change the Saturation and Value. (In the illustration the target is in the top-right-hand corner of the panel.)

DEFINING A TINT

A tint is not a separate colour but a percentage of another colour. Therefore you use a different control to define a tint.



Click on **Tint base colour** to display a menu of available colours. Because the menu shows all the colours you can base a tint on another tint. Changing the base colour also changes any tints based on it.

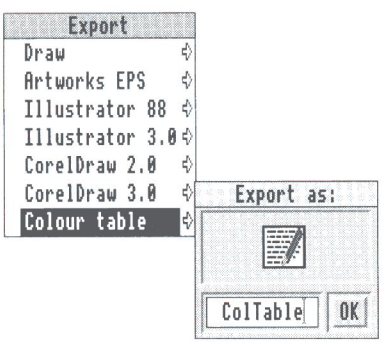
Drag the slider or type into the **%** editable field to define the tint.

DELETING AN UNUSED COLOUR

You can only delete an unused colour. If the colour is used anywhere in the document, you cannot delete it. Also you cannot delete *None* or *Registration black*.

1 Display the Colour Editor.
2 Choose the colour you want to delete from the Colour menu. (Click **Menu** on the colour name to display the Colour menu.)
3 Choose *Delete colour* from the Colour menu.

SAVING DOCUMENT COLOURS



You can save the current list of colours for use in other documents. The *Colour table* option on the *Export* submenu saves the document colours to disc.

IMPORTING COLOUR TABLES

You can import a colour table from disc. Drop the colour table icon onto the ArtWorks window to load it. The file overwrites colours of the same name in the colour list.

OVERPRINT OPTION

This option is mainly used for work that will be commercially printed. It lets you specify individual objects to overprint.

It is used where two objects in different colours overlap. A good example is printing dark coloured text on a light background. With no overprint the outlines of the text are left blank in the background colour when it is printed. (The technical term is that the text "*knocks out*" the background.) If the text is not printed exactly in line with the knock-outs (another technical term – printed "*printed exactly in register*"), thin white lines appear between the text and the background.

Dark text on a light background

Background with the text knocked-out

Out of register printing (exaggerated)

Overprinting compensates for register problems. Either the background is left solid (if you specify both line and fill to overprint) or encroaches slightly under the text (if you specify only the line to overprint.)

There is more information on overprinting in the *Commercial printing* supplement.

COLOUR FILLS

This section covers:

- the flat fill tool
- changing line colours
- the graduated fill tool
- the radial fill tool

Related sections of this manual:

- colour handling

ABOUT FILLS IN GENERAL

ArtWorks has three types of fill:

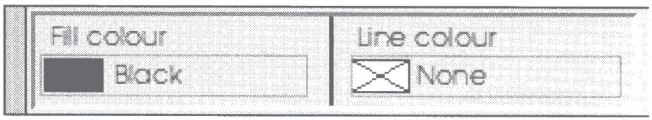
- flat fills – the shape has an even colour or tone over its surface,
- graduated fills – the colour changes as a linear progression,
- radial fills – the colour change radiates from a single point.

Displaying graduated and radial fills can slow down screen updating. If this becomes annoying, turn the WYSIWYG control down.

FLAT FILLS

Flat fill tool

Use the Flat fill tool.



Flat fill tool Info Bar

Changing a line colour

1. If necessary select the object.
2. Select the Flat fill tool.
3. Click on the line colour field. (The pointer changes to a menu shape when it is in the correct position.) This displays a menu of the available colours. Choose a colour from the menu.

The section on colour handling describes this menu in more detail. Two points to note here:

- *None* is transparent.
- *Registration black* is a special colour used in full colour printing. Do not confuse it with ordinary *Black* on the second part of the menu. Unless you are experienced in producing work for full colour printing, avoid using *Registration black*.

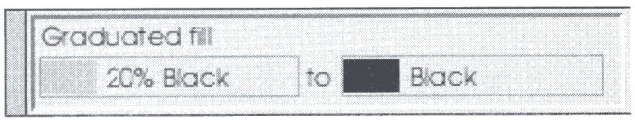
Changing the fill colour

This is similar to changing the line colour. Click on the fill colour field to display the colour menu.

GRADUATED FILLS

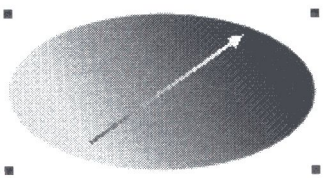
Graduated fill tool

Use the Graduated fill tool.



Graduated fill tool Info Bar

1 If necessary select the object.
2 Position the pointer where you want to start the graduated fill. (This position can be outside of the shape.)
3 Press and hold down **Select**. Drag the pointer to where you want the graduated fill to end. (Again this point can be outside of the shape.)
4. Release **Select**.



Moving the start or end points

If the start or end points are not correct, you can either:

- create a new graduated fill as just described, or
- 1 position the pointer over the start or end point (as appropriate),
  2 press and hold down **Select**,
  3 drag the point to the required position,
  4 release **Select**.

Changing the start and end colours

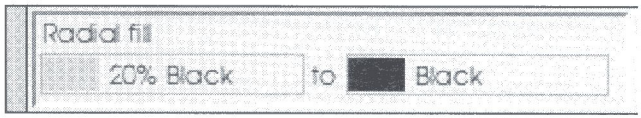
The Info bar shows the start and end colours. Clicking on a colour field displays the colour menu.

Note that you cannot use *None* or *Registration black* in graduated fills.

Radial fill tool

RADIAL FILLS

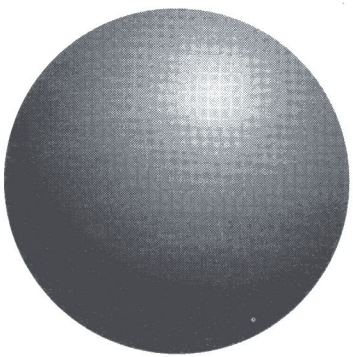
Use the Radial fill tool.



Radial fill tool Info Bar

Applying radial fills is similar to applying graduated fills. The start and end points can lie outside of the shape to be filled.

Radial fills are useful for producing highlight effects such as this:



Like graduated fills, you can move the start and end points at any time.

Note that you cannot use *None* or *Registration black* in radial fills.

PRINTING

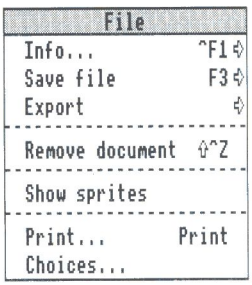
This section covers

- the Print dialogue box

For more details on preparing work for commercial printing, refer to the *Commercial printing* supplement.

Usually you create a document with the intention of printing it. You might want to produce one copy on a simple printer (such as a dot-matrix or bubble-jet). Or, if you are a professional user, produce output on an imagesetter for a commercial printer to produce thousands of copies of the document.

ArtWorks can meet both these requirements. Printer control is divided between two dialogue boxes. This means that the average user isn't faced with the wide range of controls needed by the professional.



Printing is controlled through the Print dialogue boxes. To display these either choose *Print* or press the *Print* key. (You must have a printer driver loaded.)

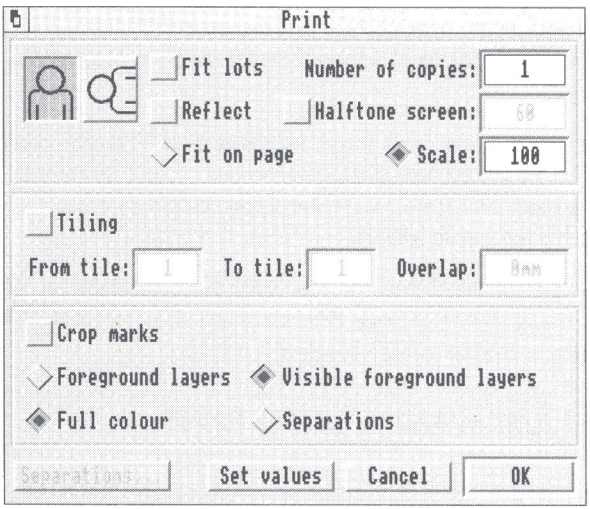
IF YOU JUST WANT A SIMPLE PRINT

You can ignore most of the options in the print dialogue box. Select the following options and click on *OK*. (All the options are described in detail later.)

- Number of copies.
- Full colour
- **Either**
  Fit on page
  or
  Portrait or landscape orientation and
  Scale (normally 100% which is full-size).

All the other options should be off.

THE PRINT DIALOGUE BOX



The action buttons:

OK

After you have set the required options, click on this to start printing.

During printing all windows displaying the current document disappear from the screen and a strip display shows the progress of the print operation. The ArtWorks windows reappear when printing finishes.

ArtWorks remembers the current print settings and saves them when the document is next written to disc.

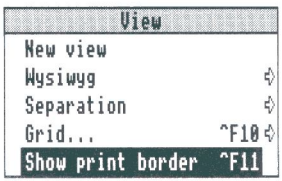
Cancel

Click on this to discard any unsaved changes made to the print settings.

Set values

This button has two uses:

- Any changes made are stored in the document. You can set up the print options without having to print.
- The screen display is updated with any relevant changes. As this updates the print borders rectangle (if the *Show print border* option is on), you can check that you have selected the correct set of print options. (Print borders are not displayed when *Fit lots* or *Fit on page* are selected.)



Separations

This displays the second print dialogue box (described later). This dialogue box is mainly used when producing output for imagesetting.

It is greyed unless you have clicked on the *Separations* radio button. The *Full colour/Separations* buttons are described later.

Orientation icons

These select upright or sideways printing.

If you are not sure which to use, choose the *Show print borders* option and click on *Set values*. A red rectangle shows you how much of the document can be printed with the current settings.

Print borders appear behind other objects and so may be hidden. If necessary, turn the WYSIWYG knob down until the print borders are shown.

Fit lots

This lets you fit multiple copies on a sheet of paper. (You will probably have to change the scaling.) See *Scale* (later in this section) for more details.

Reflect

This prints a mirror image. Its main use is for imageset output on film. See the *Commercial printing* supplement for more detail

Number of copies

How many copies of the document to print.

Fit on page

This greys out *Scale, Fit lots* and the orientation icons. To ungrey them, click on the radio button to the left of *Scale*.

Fit on page sets an appropriate scale and page orientation so the document fits onto the sheet of paper. This is the easier option to use.

Scale

100% is full size. Below 100% is smaller; more than 100%, larger than full size.

If your document is A4 sized and you want to print two copies, side by side, on an A4 sheet of paper, use 66% scale. (Also choose *Fit lots*.) This produces two A5-sized images (as A5 is half of an A4 sheet of paper).

In theory 70% should permit two copies to be printed. However, because of the non-printing margins at the edges of a sheet of paper, 66% should work with all printers.

Halftone screen

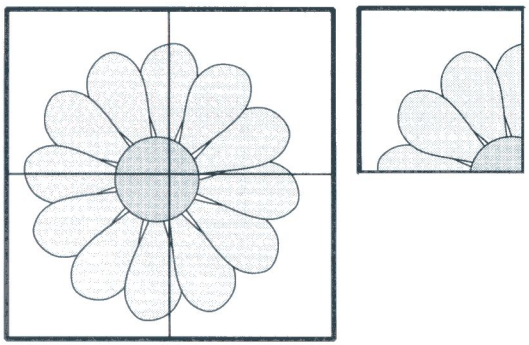
This is only needed when outputting to a PostScript device. Most other types of printer automatically set their own halftone screen.

Select the button to the left to ungrey the editable field. You can then type in the required value.

For outputting to a laser printer use a screen of 60 or 70. For monochrome (black & white) imageset output, 100-120 and for colour imagesetting, 150.

Tiling

ArtWorks lets you print large illustrations in sections or *'tiles'*.

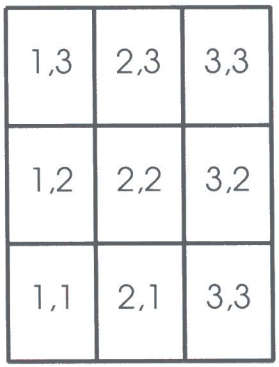


An illustration printed as four tiles; on the right a single tile.

ArtWorks automatically calculates the number of tiles required from the original size of the drawing and the scaling applied in the Print dialogue box. The number of tiles is shown in the *To tile* editable field.

Few printers can print on the entire area of a sheet of paper. Generally there is a non-printing area around the edges of the paper. Tiling takes account of these printer margins. Printing is also slightly inset from the edge of the paper to allow for cut marks. These triangular shaped marks show you the edges of the printed image. An information line on each tile tells you the tile number and its X-Y position relative to the other tiles.

The print borders (if *Show print border* is on) shows the tile outlines.



Tiling X-Y co-ordinates system

The *Overlap* editable field lets you overlap the images on adjacent tiles. This makes it easier to fit the tiles together. (With no overlap, the images butt up to each other.) The amount of overlap, if any, is a matter of personal preference.

Crop marks

These are almost essential for work that will be commercially printed. They are short lines printed outside the image area to show where to trim the finished sheets to their final size.

See the Commercial printing supplement for more on crop marks

Because crop marks are printed outside of the image area, you cannot put crop marks around an A4 image on an A4 sheet of paper. (Assuming a scale of 100%.) Crop marks require the next available size of paper. Most imagesetters can accommodate a slightly larger paper size (the **extra** sizes). These have an extra margin to accommodate crop marks.

Printing layers

There are two options:

- Print all foreground layers.
- Print only the currently visible foreground layers.

Click on the appropriate button to select the required option.

Note that only foreground layers are printed. Background layers are never printed.

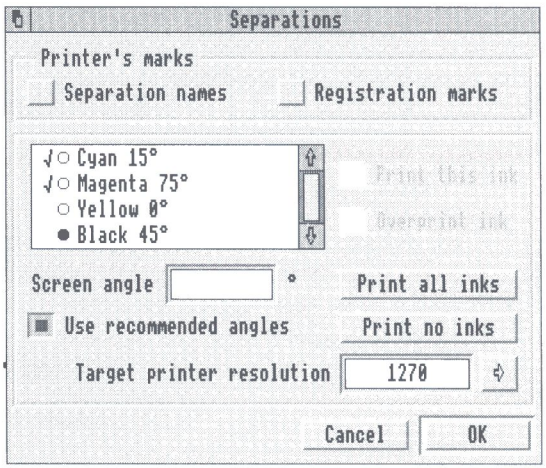
Print Full colour or Separations

Select *Full colour* to print all colours in one operation. You would use this option when proofing the complete picture to a monochrome printer or printing to a colour printer.

Select *Separations* for producing imageset separations for commercial printing. (Or for proofing the colour separations to a monochrome printer.) With this option selected the *Separations...* action button is ungreyed.

THE SEPARATIONS DIALOGUE BOX

Click on the *Separations...* button to display this dialogue box. This dialogue box sets parameters for imagesetting colour-separated output for commercial colour printing.



Printer's marks

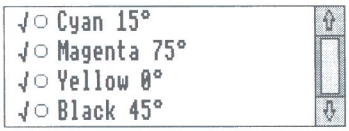
When producing colour imageset output, you normally require both *Separation names* and *Registration marks*. They are not needed for monochrome work.

Separation names prints the appropriate colour name on each separation. The names are those displayed in the separations options box (see below).

Registration marks

Registration marks are targets (see left) printed at the sides of the image. They allow the printer to accurately align the colours for printing.

Separations option box



This lets you select which separations to print and which to set to overprint. (The ticks show separations to print – **Cyan** and **Magenta** in the illustration – and the black dots show which to overprint – **Black** in the illustration.)

You may want to print only selected separations for several reasons:

- Your illustration might not use all four process colours. Printing unwanted separations costs time and materials.
- You may want to print a single separation to proof it.
- If printing to disc for sending to an imagesetting bureau, the four separations can be bigger than a floppy disc. You then need to create two or more files on different discs.

To change the print setting either:

- click on the tick area, or
- click on the separation name to select it, then click on *Print this ink*.

To change the overprint setting either:

- click on the circle, or
- click on the separation name to select it, then click on *Overprint ink*.

Selecting the separation name also lets you change the screen angle. (See later for screen angles.)

The menu of separation names grows as you add spot colours. Two buttons, *Print all inks* and *Print no inks*, make selecting names easier. *Print all inks* selects all separations. You can then remove any that are not required. *Print no inks* deselects all separations. If you only want one or two separations from a long list, you can click on this button and then select the separations you require.

Two points to note:

- **If you are producing imageset film separations –**
  Always have the complete set of separations produced at the same time. Temperature, humidity and operating conditions within the imagesetter all affect the film. You will only get a consistent set of films by producing them at the same time.
  For the same reason, never rerun just one film from a set. Always rerun the complete set.
- **If your document is to be litho printed commercially –**
  Where possible, avoid using extra spot colours. Each extra spot colour adds to the costs of printing the document.

There is more information on both these points in the Commercial Printing supplement.

Overprinting

This is usually used when printing black ink over another colour. (100% black text automatically overprints any underlying colour). The *Commercial printing* supplement describes overprinting in greater detail.

Overprinting is used when two objects, in different colours, overlap each other. When the separations are produced, the overlapped area is cut out of the lower object. (The technical termed is "knocked-out".) When the work is printed, thin white lines can appear at the boundary of the two colours because of misalignment during printing. Overprinting does not knock out the underlying colour and the white lines cannot appear.

Black is simple to overprint because it is relatively opaque and hides any underlying colour. Overprinting other colours can cause colour shifts. For example, magenta and yellow overprinted gives red (a shade called *Warm Red*.)

Screen angles

These only apply when outputting to a PostScript device such as an imagesetter.

Half-tones or tints are printed as rows of dots on a regular grid. The human eye is particularly sensitive to horizontal and vertical alignments. For this reason, the most prominent colour – black – is usually printed with the grid rotated to 45°.

There is a further problem when printing different colours. Because of slight movements during printing interference patterns are easily created. (These are called *moiré* patterns.) To avoid this, each colour grid is rotated by a different angle. These angles must be carefully chosen and vary with resolution. For these reasons we recommend always selecting *Use recommended angles*. Only change the screen angles if you are experienced in producing half-tone separations.

As a footnote:

The recommended angle for yellow is 0° which is horizontal. This is not a problem as the eye is least responsive to yellow and so does not detect the horizontal and vertical grid orientation.

Printer resolution

Either type a value into the editable field or choose from the menu of common resolutions. If you are producing output for imagesetting, check with the bureau which resolution to use.

IMPORTING & EXPORTING DRAWINGS

This section covers importing/ exporting in these formats:

- Acorn Draw
- Computer Concepts' Equasor (import only)
- Adobe Illustrator 88
- Adobe Illustrator 3
- CorelDraw 2
- CorelDraw 3
- Aldus Freehand
- Adobe Photoshop

You may want to use your illustrations in other applications on the Archimedes. Possibly you will want to transfer files to and from other types of computer. ArtWorks offers a wide range of import and export options.

To other applications on the Archimedes you can use Acorn's standard *Draw* format. Most applications that can incorporate illustrations can accept this format.

To other types of computer you can use the **EPS** (Encapsulated PostScript) format. This is recognised by a wide range of applications on the PC and the Mac.

PC = IBM PC and equivalents
Mac = Apple Macintosh

When importing EPS files ArtWorks can recognise the format variations used by different programs. It can automatically translate these formats.

When exporting EPS files, you have to select the correct format variation.

GENERAL NOTES ON EXPORTING AND IMPORTING

The most efficient way of saving documents on disc is in ArtWorks format. This retains all the information on the document.

With Draw and EPS format files you have a range of options on how to translate the document. Some of these options can produce very large files. (If, for example, your document has a lot of graduated or radial fills.)

With most formats some information is lost in the translation. For example, other packages cannot accept ArtWorks graduated and radial fills. However ArtWorks can accept grad fills from Corel and FreeHand.

File translation can take several seconds for a complex illustration. You can always abort the translation by pressing *Esc*.

When exporting work carefully check the end result. Normally it should be correct but ambiguities exist in any

protocol and the translated result may differ slightly from the original.

Note:
ArtWorks has been tested with the current versions of the various programs mentioned. However, the companies producing these programs may change their specification at any time without notice. Information is given in good faith but no guarantee is given that files can be transferred between ArtWorks and any other package. Further, many programs claim compatibility with Illustrator format. Computer Concepts cannot verify these claims with respect to compatibility with ArtWorks.

File transfers and the PC

Computers with RISC OS 3 can read and write PC format discs. You are limited to 720Kbytes discs on the A300/A400 series, A540 and A3000 computers. Newer models can also handle high-density 1.44Mbyte discs.

Minerva Software
Minerva House
Baring Crescent
Exeter
Devon
EX1 1TL

RISC OS 2 computers require a separate utility. A suitable utility is *PC-Access* from Minerva Software. This can read, write and format discs. It uses a conventional directory window. You transfer files as usual by dragging the icon between directory windows.

A second utility is *PC-Dir*. This is designated 'CareWare' – you can obtain a copy for nothing but, if you find it useful, you are asked to make a donation to a nominated charity. *PC-Dir* can only read and write PC discs; it cannot format them. (You will need to format the discs on the PC itself.)

File transfers and the Mac

The Archimedes cannot directly read and write Mac format discs. Most modern Macs can accept PC format discs so you can transfer files on these (see above). There are two programs available to transfer PC format files to the Mac:

- *Apple File Exchange* – this converts files in PC format to Mac format. It is normally supplied with any Mac which can accept PC format discs.

- *DosMounter* – available from Computers Unlimited. This lets you directly read and write PC discs as though they were Mac format.

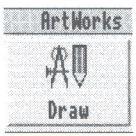
You will find DosMounter much easier to use.

DRAW FILES

Acorn's Draw format is used in a wide range of applications on the Archimedes. It is not suitable for use on other types of computer.

Setting the import/export options

Choose *Choices* on the Program Menu.



Click on *Draw*. This opens the Options dialogue box.

Save/Cancel/OK buttons

Select clicking on any of these buttons performs the requested action and closes the dialogue box.

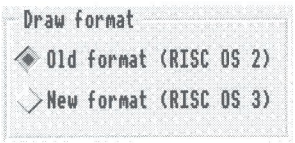
Adjust clicking also performs the requested action but the dialogue box remains on the screen. This lets you make further changes.

Save – This implements any changes you have made. The changes are stored within ArtWorks and apply whenever you load ArtWorks.

Cancel – This discards any changes made since you last clicked on *Save* or *OK*.

OK – This implements any changes made. These changes are not permanent and are discarded when you quit ArtWorks.

Draw format



There are two versions of the Acorn operation system (RISC OS):

RISC OS 2 is used in the Archimedes range and the A3000,

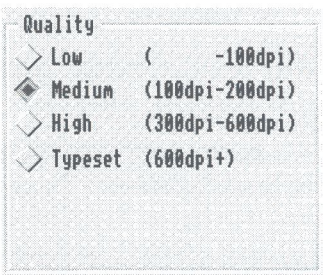
RISC OS 3 is standard on newer models and is available as an enhancement for the A300 /A400 series, A540 and A3000. It provides extra facilities such as rotated text and sprites.

An enhanced version of the Draw format is part of RISC OS 3. Impression can also handle RISC OS 3 format.

Select the appropriate option.

Files in *Old format* can be read by either version of RISC OS. Files in *New format* may give errors when loaded into RISC OS 2.

Quality



Some ArtWorks functions such as graduated fills have no equivalent in Draw format. Therefore, ArtWorks has to convert them. This can create large files.

Select the quality suitable for your printer.

- *Low* saves minimum information. You may see noticeable steps in graduated and radial fills.
- *Medium* for most printers.
- *High* for high definition laser printers (such as LaserDirect HiRes).
- *Typeset* for outputting to an imagesetter.

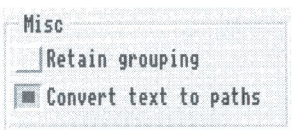
If you print the illustration at half size (50%), you double the effective resolution. A 150dpi image printed at 50% is effectively 300dpi. Thus printing a reduced image lets you use a low quality and hence create a smaller file.

Retain grouping

If you retain grouping, any groups created in ArtWorks are retained. The drawback is that the entire group must be loaded into memory to convert it to a Draw file. This may not be possible if you are short of memory space.

With this option not selected, the memory required for converting is much smaller.

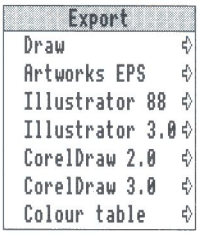
Convert text to paths



This option converts text into its constituent lines and curves.

RISC OS 2 cannot rotate text in Draw files. This option therefore converts text into Draw paths which can then appear rotated. The drawbacks are that converted text requires more memory and you cannot edit it (because it is no longer text).

It is also useful when the sending files to other people who may not have the same set of fonts. As the text is just a series of lines and curves, a matching font is not needed.



THE EXPORT MENU

The options for the different formats is described later. The bottom option *Colour table* saves the current list of colours. This option is described in *Colour handling*.

Computer Concepts Equasor FORMAT

Equasor is Computer Concepts' equation generating package. Just drop an Equasor file into ArtWorks. The format is automatically recognised and converted to ArtWorks format.

EPS FILES

Setting the import/export options

Choose *Choices* on the Program Menu.

Click on *EPS*. This opens the Options dialogue box.

The dialogue box shows a list of the current packages ArtWorks can import and export to.

Save/Cancel/OK buttons

Select clicking on any of these buttons performs the requested action and closes the dialogue box.

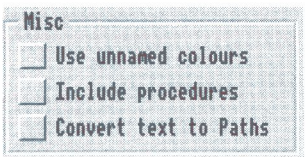
Adjust clicking also performs the requested action but the dialogue box remains on the screen. This lets you make further changes.

Save – This implements any changes you have made. The changes are stored within ArtWorks and apply whenever you load ArtWorks.

Cancel – This discards any changes made since you last clicked on *Save* or *OK*.

OK – This implements any changes made. These changes are not permanent and are discarded when you quit ArtWorks.

Misc



Use unnamed colours – used when importing. In many packages colours are left unnamed. This option lets you import these names without change or let ArtWorks assign a suitable name.

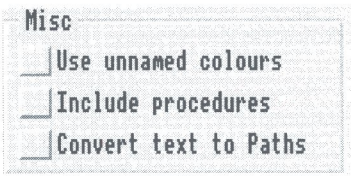
This option only affects unnamed colours. Named colours are always imported without change.

Include procedures – used when exporting. Select this option to output to a PostScript printer or similar device attached to another type of computer. (To output to a PostScript printer attached to the Archimedes, use the standard Acorn PostScript printer driver.)

Procedures are only exported in ArtWorks EPS format. Copyright prevents ArtWorks including procedures in other formats. (Though this hardly matters as they are generally only used for transferring files.)

Convert text to paths – used when exporting in ArtWorks EPS. Refer to the Draw options for more information on this option.

Quality



Certain ArtWorks features, such as graduated fills, have no equivalent in some of the EPS formats. Therefore, ArtWorks has to convert them. This can produce large files at higher resolutions.

Select the option suitable for the final output device.

- *Medium* for most printers.
- *High* for high definition laser printers.
- *Typeset* for imagesetters.

IMPORTING AND EXPORTING TO OTHER PACKAGES

Font matching

The names of fonts available on the Archimedes usually differ from equivalent fonts on PostScript devices. (Many fonts have proprietary names.) To ensure correct character conversion, the Archimedes font name and its PostScript equivalent must be matched. If you use a font which is not currently mapped to a PostScript font, you can add it to the map list.

The table of font names is in a file called *Mapping*. To view it:

1. Save any open files and quit any applications you have loaded.
2. Hold down the *Shift* key and double-click on the ArtWorks icon in a directory window. This opens a window onto ArtWorks.

3 Double-click on *Auto* in that window. This opens a second directory window.
4 Hold down the *Shift* key again and double-click on *!TextTool*. This opens a third directory window.
5 Load the file *Mapping* into a suitable text editor such as *Edit*.

You can now add new fonts to the end of the file. The format is

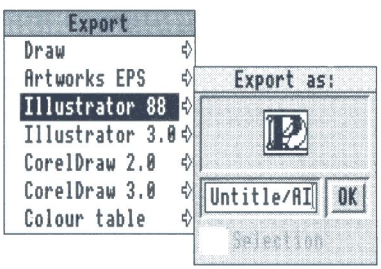
PostScript font name = Archimedes font name

(The existing file contents show this format.)

When you have finished adding names, save the file back to the *!TextTool* directory. Reset your computer by pressing *Ctrl-Reset*.

Adobe Illustrator 88

Exporting

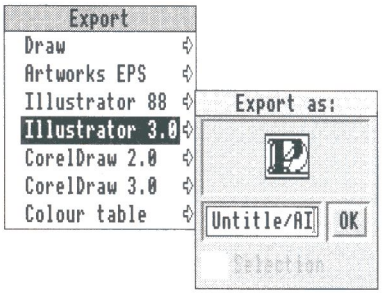


/AI in the filename is the standard MS DOS extension for Illustrator files.

- Text is automatically converted to paths.
- Graduated fills are converted to a series of polygons. (This can produce large files.)
- Paths cannot contain sub-paths.
- Extra lines may appear; this is an unavoidable part of the protocol.

Adobe Illustrator 3

Exporting



/AI in the filename is the standard MS DOS extension for Illustrator files.

- Text is automatically converted to paths.
- Graduated fills are converted to a series of polygons. (This can produce large files.)
- Sprites are not exported. (Nor can they be imported.)
- Illustrator and the Archimedes use different winding rules. This should be corrected during translation but we advise you check the illustration in Illustrator.

Aldus FreeHand

FreeHand can import and export in Illustrator format.

CorelDraw

Important: ArtWorks cannot import files in **Corel Native** format. You must use **EPS** or **Illustrator** formats – see below.

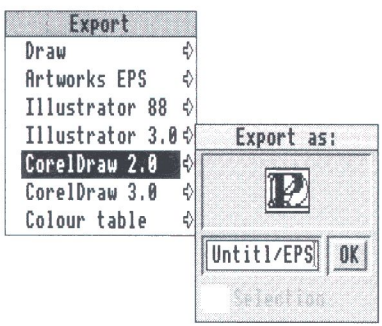
Importing from CorelDraw 2:

- Use *Corel EPS* or *CorelTrace EPS* format; do not use *Illustrator*.
- Graduated fill information and colour names are retained.
- You can load standard colour palettes.

Importing from CorelDraw 3:

- In general use *Corel EPS* or *CorelTrace EPS* format.
- If your illustration contains a lot of text use *Illustrator 3* format. However, this does not transfer graduated fill information.
- Graduated fill information and colour names are retained if you use Corel EPS formats.
- You can load standard colour palettes.
- Sprites are not imported.

Exporting

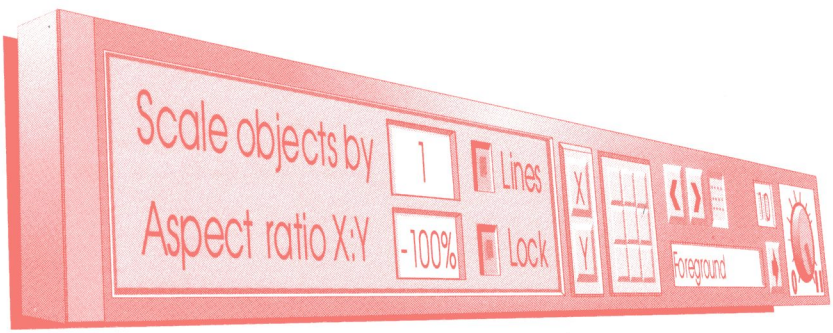


/EPS in the filename is the standard MS DOS extension for CorelDraw EPS files.

- Text is automatically converted to paths.
- Sprites are not exported.

Chapter 3:

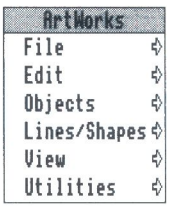
The Menus



This section only briefly describes the menus. For a full description of using the various options, refer to the previous chapter on using ArtWorks.

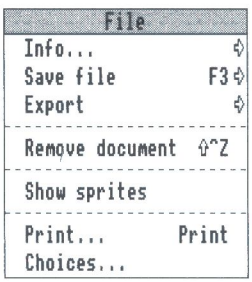
In many places these descriptions refer to the **selected object**. In most cases, the described action also applies when you have several selected objects. We just use **selected object** as shorthand for **selected object or objects**.

THE MAIN MENU



To display this menu move the pointer over an ArtWorks window and click **Menu**.

The File submenu:



Info...

This displays an information box about the current document.

Save file

Use this option to save the document in ArtWorks file format and to export colour tables. See *Document handling* for more information.

Export

Use this option to save the document in Draw or EPS formats. See *Importing & Exporting Files* for more information.

Remove document

This removes the document from memory. You are warned if the document has unsaved changes. You can then save the document before removal.

Show sprites

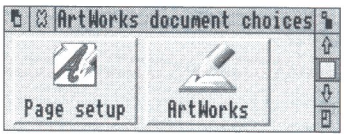
This shows the sprite pool. See *Sprite handling* for more information.

Print...

This displays the print dialogue box. See *Printing* for more information.

Choices...

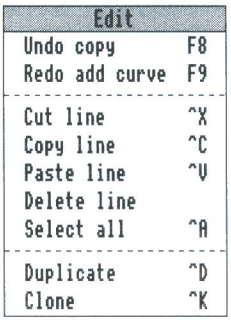
This displays the choices for the document. (In the program menu there is a *Choices* option which sets choices for all documents.)



See *Document handling* for more information on the *Page setup* options.

See *Undo & Redo* for more information on the *ArtWorks* options.

The Edit submenu:



Undo

The wording of this option reflects the last operation performed.

It duplicates the action of the Undo button on the Info Bar.

Redo

The wording of this option reflects the last Undo operation.

It duplicates the action of the Redo button on the Info Bar.

Cut

The wording of this option reflects the type of object selected.

Cut (remove from the document) the selected object to the clipboard.

Copy

The wording of this option reflects the type of object selected.

Copy the selected object to the clipboard. The object remains in place in the document.

Paste

The wording of this option reflects the contents of the clipboard.

Paste the clipboard contents into the selected document.

The paste position is controlled by the *Shift* key:

- Holding down *Shift* pastes the clipboard contents into their original position in the document,
- otherwise, the contents are pasted centered on the middle of the window.

Delete

The wording of this option reflects the type of object selected.

This deletes the selected object.

Select all

This selects all objects in the current document or layer.

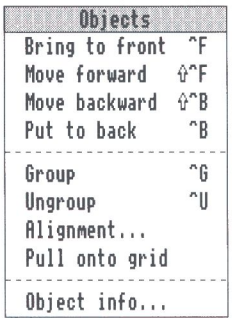
Duplicate

This copies the selected object and places the copy slightly offset from the original. The copy becomes the selected object.

Clone

This also copies the selected object but places the copy directly over the original object. The copy becomes the selected object.

The Objects submenu:



Bring to front

Move the selected object to the front of all other objects in the same layer. See *Object Handling* for more information.

Move forwards

Move the selected object one step towards the front. See *Object Handling* for more information.

Move backwards

Move the selected object one step towards the back. See *Object Handling* for more information.

Put to back

Move the selected object behind all others in the same layer. See *Object Handling* for more information.

Group

Group the selected objects together to appear as a single object. Has no effect when a single object is selected. See *Object Handling* for more information.

Ungroup

Only has an effect when the selected object is a group. Split the group into separate objects. See *Object Handling* for more information.

Alignment...

Used to align several objects. Has no effect when a single object is selected. See *Object Handling* for more information.

Pull into grid

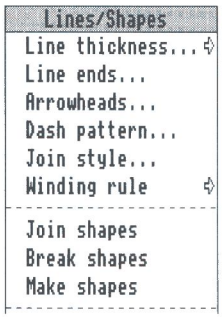
Snap the bottom-left corner of the bounding box of the selected object to the nearest grid point.

Object info...

The wording of this option reflects the type of object selected.

This displays additional information about the selected object.

The Lines/Shapes submenu:



Line thickness...

Type in the required line thickness.

Line ends...

This lets you select different patterns for the line ends. See *Drawing Lines & Shapes* for more information.

Arrowheads...

This lets you select different styles for arrowhead line ends. See *Drawing Lines & Shapes* for more information.

Dash pattern...

This lets you select different line patterns. See *Drawing Lines & Shapes* for more information.

Join pattern...

This lets you select different patterns for the joins between line segments. See *Drawing Lines & Shapes* for more information.

Winding rule

There are two options *Non-zero* or *Even-odd*. They control how overlapping areas of shapes are filled. See *Object Handling* for more information.

Join shapes

Use this option to create transparent holes within shapes. See *Object Handling* for more information.

Break shapes

This cancels a *Join shapes* command. See *Object Handling* for more information.

Make shapes

This converts predefined objects such as rectangles, ellipses and text into shapes. That is, ArtWorks no longer sees them as rectangles, ellipses or text but as a collection of lines and curves.

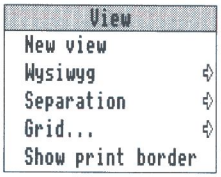
This has several uses:

- Predefined objects cannot be used as envelope or perspective moulds. You must convert them to shapes first.
- You can manipulate text in almost unlimited ways, adding new curves and ornamentation almost at will. Note that you cannot edit text converted to shapes as it ceases to be text.
- You may want to send text to someone who does not have that particular font. As converted text is just a collection of lines and curves, it does not need to use the original font.

Line widths

This is a list of pre-defined line widths.

The View submenu:



These menu options only change the document displayed on the screen. They have no effect when the document is printed.

New view

Use this option to open a new window onto the current document. There is a similar option in the Program Menu for any document in memory.

WYSIWYG

This displays a submenu of WYSIWYG settings. It is an alternative to using the WYSIWYG knob on the Info Bar. See *Document Handling* for more information.

Separation

This lets you view the individual colour separations of the document. Its main use is when preparing documents for commercial printing.

With WYSIWYG set to 11 the separation is shown in the separation colour. At lower settings it is shown in black.

Grid...

This option controls the optional on-screen grid. See *Document Handling* for more information.

Show print border

Click on this option to show or hide a red rectangle on-screen marking the printable area of the document. (There must be a printer driver loaded.) A tick to the left of the name shows that print borders are displayed.

Several factors affect the size of the printable area:

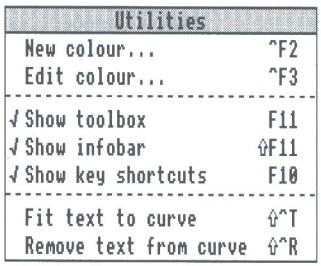
- The type of printer driver. Most printers have non-printable borders around the edge of the paper. The rectangle is inset from the edge of the page to allow for these borders.
- The page orientation (sideways or upright).
- Print scaling.

When tiling is selected, a grid showing the individual tiles is shown.

Print borders are not displayed when *Fit lots* or *Fit on page* are selected.

See *Printing* for more information.

The Utilities submenu:



New colour...

This displays the Colour Editor ready to create a new colour. See *Colour Handling* for more information.

Edit colour...

This displays the Colour Editor ready to edit an existing colour. See *Colour Handling* for more information.

Show toolbox

Click on this option to show or hide the Toolbox. A tick shows when it is displayed. (It may be hidden by other windows.)

Show infobar

Click on this option to show or hide the Info Bar. A tick shows when it is displayed. (It may be hidden by other windows.)

Show keyboard shortcuts

Click on this option to show or hide keyboard short-cuts from the menus. Showing the short-cuts can be a useful reminder but increases the menu widths.

Fit text to curve

This fits a line of text to an arbitrary curved line. You cannot edit text while it is fitted to a curve. See *Text Handling* for more details.

Remove text from curve

This undoes the effect of *Fit text to curve*. This lets you edit the text. See *Text Handling* for more details.

THE PROGRAM MENU

To display this menu move the pointer over the ArtWorks icon on the icon bar and click **Menu**.

Info...

This displays the usual information box about the ArtWorks application. If you contact Computer Concepts about ArtWorks, you may need to quote the version number in this information box.

New view

This displays a list of documents loaded in memory. Click on a document name to open a window onto it. You can also open a window onto the clipboard from this menu.

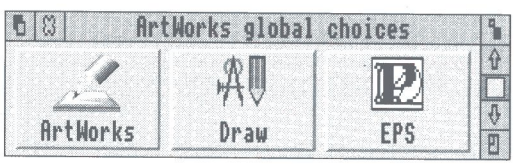
An asterisk to the right of a document name shows that the document has unsaved changes.

Remove document

This displays a list of documents loaded in memory. Click on a document name to remove it from memory. If the document has unsaved changes, an Alert box warns you. You then have to confirm that you want to delete the document.

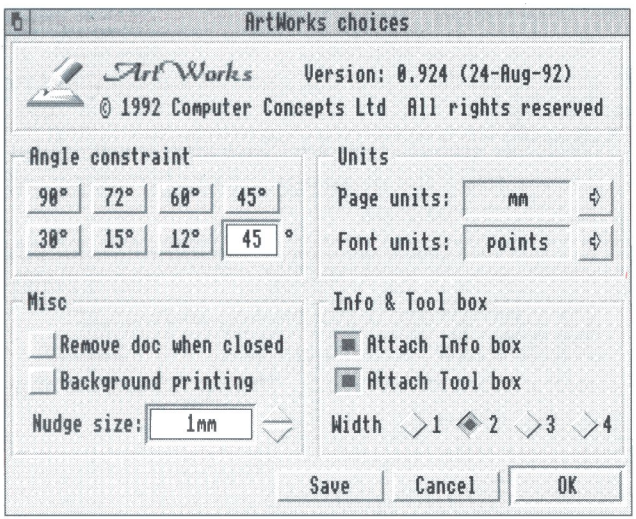
Choices...

This displays various choices that apply to all documents. (The choices menu option in the Main Menu applies only to that document.)



Click on any of the options to display its dialogue box.

The *Draw* and *EPS* dialogue boxes are described in *Importing and Exporting files.*



Clicking on *OK* implements any changes you have made. The changes are temporary and are lost when you quit ArtWorks.

Clicking on *Save* also implements any changes. The current settings are saved by ArtWorks and will also apply in the future.

Clicking on *Cancel* discards any changes made since you last clicked on *OK* or *Save*.

Angle constraint sets the angle multiple used when the constraint key (*Ctrl*) is pressed during drag operations.

Units sets the units to be displayed in dialogue boxes. You can always enter dimensions in any of the units used by ArtWorks. Acceptable units are **millimetres (mm), centimetres (cm), inches (in), points (pt)** or **picas (pi)**.

Info & Tool box: With the attach options set, the Info Bar and Toolbox follow the ArtWorks window around the screen. Unset the options for free-floating Info Bar or Toolbox.

The *Width* option sets the width of the Toolbox as 1-4 icons wide.

The *Misc* options:

Remove doc when closed – with this option set, clicking on the Close icon removes the document from memory.

With this option unset, the Close icon merely closes the window. The document remains in memory until specifically removed.

Background printing – this allows more time for other applications in the Archimedes to run during printing. The disadvantage is that printing takes longer.

Nudge size – You can use the ¬ keys to nudge the selected object. This option sets the size of edge nudge step.

Save choices

This duplicates the *Save* buttons on the choices dialogue boxes. This option lets you save all the current choices in one operation.

For more information on the Primary palette, refer to 'colour handling'

Primary palette

This is only useful in 16 colour screen modes.

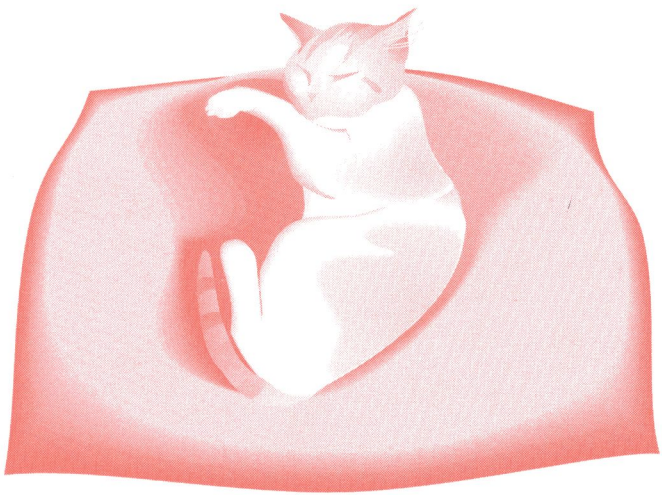
Click on this option to change the screen palette to show the primary colours. (These are Red, Green, Blue, Cyan, Magenta, Yellow.)

Quit

This is the standard option to quit ArtWorks and remove it from memory. An Alert box tells you if there are any unsaved documents.

Chapter 4:

The Utilities



This section describes using the utilities supplied with ArtWorks. *FlipTop* lets you flip between screen modes either for bigger desktops or to change the number of colours displayed. *NewModes* gives you additional screen modes better suited for illustration work. *ABI* handles the user interface. In general its function is invisible to the user but this section describes error handling.

FlipTop

What you can use FlipTop for –

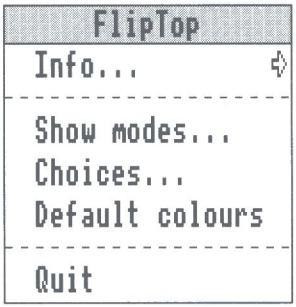
The Archimedes lets you change the logical size of the screen (the desktop size). (You obviously cannot change the physical size of the screen. What you change are the number of horizontal and vertical pixels or elements on the screen.) The larger the desktop size, the more information can be displayed. The drawbacks are that larger desktops require more memory and also each item on the screen is smaller. The practical limit to the desktop size is your eyesight and the quality of your monitor.

Most desktop sizes can display 2, 4, 16 or 256 colours. At present (August 1992) 256 is the limit. In the future, more colours will be possible.

Each combination of size and colours is called a *Screen mode*. The Archimedes has a bewildering range of screen modes using a bizarre numbering scheme. FlipTop provides a simple display of all the screen modes and an easy way to change between them. It also provides a quick way to change the number of colours without changing the desktop size.

Caution:

Some screen modes may not be suitable for your monitor and the picture on screen may break up. If this happens press *Esc* or *Break* to return to the previous settings.



The FlipTop menu

Click **Menu** on the icon on the icon bar.

Info – gives you information about FlipTop.

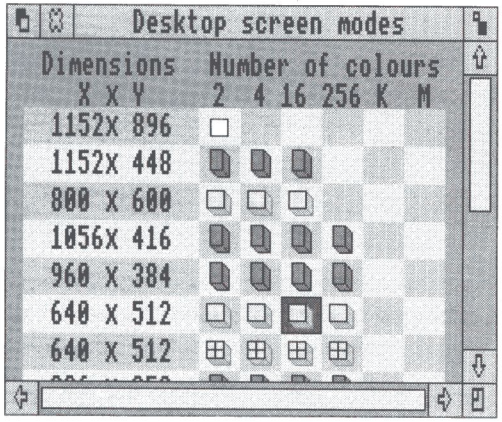
Show modes... – this displays the screen mode selector. This is described later.

Choices – this displays a dialogue box to set up key short-cuts and set the count-down option (described later).

Default colours – this is the same as the *Default* option in Palette. It returns the screen to using the default set of colours.

Quit – this is the usual option to remove FlipTop from memory.

The screen mode selector



The left-hand column shows the number of pixels displayed (the desktop size).

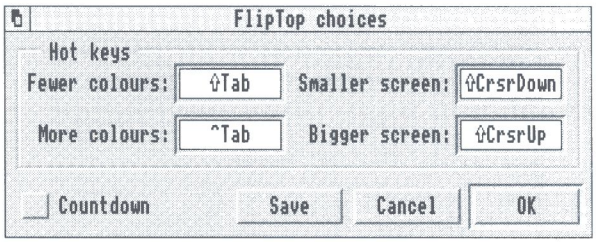
Each column represent the number of colours that can be displayed. *K* and *M* stand for thousands and millions of colours respectively. The icons are placed where there is a screen mode for that desktop size and number of colours.

There are several different forms of icon used in the selector:

- The current screen mode has red background.
- Square pixel modes (which give the most accurate dimensional displays) have yellow squares.
- Non-square pixel modes have green rectangles.
- Some modes squash the system font (used for Title Bars, menus, error messages and so on) to get more information on the screen. These modes may not work well on some monitors. Squashed modes have a vertical or horizontal bar across the icon.
- Some modes may not be available on your computer. These are shown as white squares.

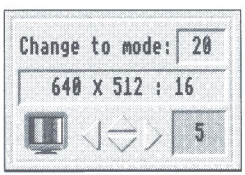
Click on a green rectangle or yellow square to change the screen mode. Clicking on a white square has no effect.

The Choices dialogue box



You can also change screen modes using keyboard shortcuts. This dialogue box lets you alter the default settings. Click on *Save* to make the current settings the defaults.

The *Countdown* button lets you change the screen mode directly. Click on it and then click on *OK*. Now click on the icon on the icon bar for the count-down display:



This display shows the current mode number, its desktop size and the number of colours. To change the size click on the up and down arrows. To change the number of colours click on the left and right arrows.

After any change the count-down is reset to 5. When the count reaches 0 any change takes effect; this delay lets you change your mind. Click on the orange box to immediately implement any changes. Click outside the box to cancel the operation.

A quick way to change the number of colours without using count-down –

The figure underneath the icon is the number of colours displayed on screen. Double-click on the icon to change the number of colours:

- use **Select** to decrease the number of colours, or
- use **Adjust** to increase the number of colours (up to the maximum available for the current screen resolution).

The monitor display may be unable to display some selections, particularly 256 colours. (This is a quirk of individual monitors.) If this happens press *Esc* or *Break* to return to the previous selection.

NewModes

These modes give bigger screens for ordinary and multi-sync monitors. They provide a variety of different physical and logical resolutions in 2, 4, 8 and 256 colours.

Load *!NewModes* as normal by double-clicking on its icon. No icon appears on the icon bar as *!NewModes* is not a conventional application. FlipTop provides an easy way to change screen modes.

Mode	Pixel Resolution	Colours	Memory	Freq

The first two modes can be displayed on both ordinary and multisync monitors. They are designed to give ordinary monitors larger physical desktops.

66	832xx288	16	120K	50Hz
67	..	256	240K	

The following modes can only be displayed on multisync monitors.

72	1056xx416	2	54K	44Hz
73	..	4	108K	
74	..	16	215K	
75	..	256	429K	
76	960xx384	2	45K	51Hz
77	..	4	90K	
78	..	16	180K	
79	..	256	360K	
80	986xx352	2	40K	57Hz
81	..	4	80K	
82	..	16	160K	
83	..	256	320K	
84	832xx336	2	35K	63Hz
85	..	4	70K	
86	..	16	140K	
87	..	256	280K	

Modes 88 to 91 can be used with both ordinary and multisync monitors. They give a larger logical desktop without taking up extra screen memory.

Mode	Pixel Resolution	Colours	Memory	Freq
88	640xx256	2	20K	50Hz
89	..	4	40K	
90	..	16	80K	
91	..	256	160K	

The following modes can only be used with multisync monitors.

92	640xx512	2	40K	50Hz
93	..	4	80K	
94	..	16	160K	
95	..	256	320K	

Modes 88 to 95 have the same pixel resolutions as existing RISC OS screen modes but they have different logical resolutions, which make them look bigger. Modes 66 to 87 offer various compromises between screen resolution, memory, processor speed and refresh rate. Mode 95 has the greatest resolution but uses the most memory and slows the processor down the most. Mode 84 uses the least memory, is flicker-free and gives you the best processor speed but it is not very big.

UPDATING ABI

The ABI module controls the user interface of ArtWorks and other applications. This section describes the action you should take if you get the error message "**... Please refer to the "Updating ABI" section in the manual**."

The message means the application requires a more recent version of ABI than that on your disc. Read the manual for the application that you have updated – this section covers problems after ArtWorks updates.

Depending on your level of expertise you can use either the non-technical or the technical way to update ABI. If the message persists, seek technical assistance.

The non-technical way

1. Re-run the ArtWorks *!Install* program. This will re-install ABI on your system.
2. Reset the computer, making sure that you save everything before you do.
3. Start up your programs again.

The technical way

1. Open ArtWorks *RMStore* directory.
2. Open the *!System.Modules* directory.
3. Copy the *ABIMod* file from the *RMStore* directory into *!System.Modules*.
4. Reset the computer, making sure that you save everything before you do.
5. Start up your programs again.

Chapter 5:

Keyboard short-cuts

Keypress	*+Ctrl*	*+Ctrl+Shift*
A	Select all	–
B	Put to back	Move backwards
C	Copy	–
D	Duplicate	–
E	Kern text right	–
F	Bring to front	Move forwards
G	Group	–
H	–	–
I	Join shapes	–
J	Kern text down	–
K	Clone	–
L	Break shapes	–
M	–	–
N	Make shapes	–
O	–	–
P	Pull to grid	–
Q	–	–
R	Kern text left	Remove text from curve
S	Swop case of text	–
T	–	Fit text to curve
U	Ungroup	–
V	Paste	Paste where cut
W	–	–
X	Cut	–
Y	Kern text up	–
Z	Clear selection	Remove document

– means undefined

Function key		*+Ctrl*	*+Ctrl+Shift*
F1	Help ¶	Document info	Object info
F2	Select tool	New colour	–
F3	Save document	Edit colour	–
F4	–	Line width	–
F5	–	Line ends	WYSIWYG 11
F6	–	Arrowheads	WYSIWYG 10
F7	–	Dash pattern	WYSIWYG 5
F8	Undo	Line joins	WYSIWYG 0
F9	Redo	Alignment	–
F10	Show key short–cuts	Grid	–
F11	Remove Toolbox	Show print borders	Remove Info Bar

Shift-F11 Removes/shows the Info Bar

¶ not yet implemented.

Function key F12 is reserved for system use.

Other keys:

Ctrl	Constrain action
Shift	Select overlapping frames
Left-Alt	Temporary Select
Right-Alt	Temporary Push

Chapter 6:

Appendices

ABOUT FONTS

Typography (the appearance of printed text) is a vast subject. There are, however, a few basic words and phrases that need explaining.

FONT or TYPEFACE

This describes the appearance of the text. A font is carefully designed so that all the characters in it fit neatly with each other in any combination. There are hundreds of fonts available; often the differences between them are very slight.

Sample fonts:
Homerton
Trinity
Corpus

FONT FAMILY

It is unusual for a font to have only one style (unless it contains only symbols or other specialised characters). Normally several variants are available and these variants form the family of the font. For example, the Trinity family supplied with *!Fonts* has four variants :

Trinity Medium
Trinity Medium Italic
Trinity Bold
Trinity Bold Italic.

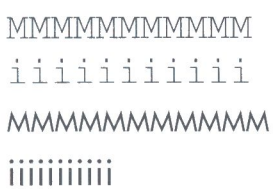
Trinity is a small family – the Helvetica family, which is similar to Acorn's Homerton font, can have over 30 variants.

FONT SIZE

The font only describes the appearance of the characters and not their height. In fact, a font can be almost any size from very small to very large. The height of a font is measured in *points* (abbreviated to *pt*). A point is $^{1}/_{72nd}$ of an inch (about 0.35 mm). The font height (or font size) is not the height of the characters. (Clearly the character **a** has a different height to the character **A**.) Instead, each character is enclosed by an imaginary box of a constant height; this box is the height of the font size.

When deciding which font size to use remember to allow for any reduction in size when printing. Theoretically, the minimum readable height for characters to be readable is 1mm high (about 3pt). However 3pt characters are tiny and 6pt is a more practical minimum to use.

CHARACTER WIDTH



The width of a character can be either:

- Constant for all characters so that **M** occupies the same space as **i**. Such fonts are called *monospaced* fonts; the Corpus font is an example of this.
- Variable so that **M** occupies more space then **i**. Such fonts are called *proportional* fonts and are easier to read both on the screen and when printed. The font used in this manual is a proportional font.

The power of the computer can be used to stretch or compress characters to make them wider or narrower. This changes the aspect ratio which is the ratio of the current width to the original width. (100% means the character is its original width.) The larger the ratio above 100%, the more the character has been stretched.

USING DIALOGUE BOXES

Dialogue boxes let you make several changes at once. No single dialogue box shows all possible features so parts of several dialogue boxes are used as examples.

A dialogue box has a Title bar and Back icon like a conventional window but does not have a Close icon nor can it be rescaled.

Action buttons

These are grouped along the side or bottom of a dialogue box.

Changes that you make in a dialogue box do not immediately affect the document. So, if you make a mistake or change your mind, click on the **Cancel** button to discard any changes you made in the dialogue box.

If you click **Select** on one of the action buttons, the requested action takes place and the dialogue box disappears from the screen.

If you click **Adjust** on one of the action buttons, the requested action takes place but the dialogue box remains on the screen. This is useful when making a series of changes and youwant to see the effect of each change.

Click **Adjust** on the **Cancel** button to discard any changes you made and redisplay the previous values.

The Default Action button

The **OK** button is surrounded by a yellow moat to show that it is the default action button. This means that pressing the *Return* key on the keyboard has the same effect as clicking on the button.

Editable fields

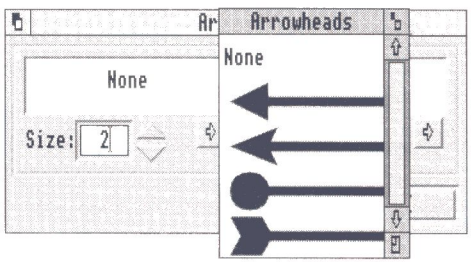
There are two types of editable field:

- those where you can choose from a limited range of options, and
- those where the range is wide (usually numeric values).

on *off*

Some editable fields have a switch to their left. Before you can enter a value into the editable field, this switch must be **on**. When **on**, it appears recessed into the dialogue box and has a red square in its centre. Click on a switch or the text beside it to change between **on** and **off**.

A limited range of options:



In the illustration, you can only choose from the available arrowheads and so have a relatively limited range of options.

Click on the arrow box underneath the editable field to display the menu of the available arrowheads.

Choose a new option in the usual way by clicking on it on the menu.

To remove the menu from screen, click anywhere on the visible part of the dialogue box.

A wide range of options:

These editable fields let you type in a value, usually numeric. To select a field, position the pointer over it and click **Select**.

You can move between editable fields of this type by:

- using the and keys, or
- using *Shift-Tab* and *Tab*.

Shift-Tab and moves to the left or up; *Tab* and moves to the right or down. If the cursor is in the bottom-right editable field, *Tab* or moves it to the top-left editable field. Similarly, *Shift-Tab* or moves the cursor from the top-left editable field to the bottom-right editable field.

Ctrl- moves the cursor directly to the top-left editable field. *Ctrl-* moves the cursor directly to the bottom-right editable field.

You edit the contents of an editable field in the usual way:

- use the ¬ and keys to move the cursor to the left or right,
- use the *Backspace* key to delete the character to the left of the cursor,
- use *Copy* to delete the character to the right of the cursor,
- use *Ctrl-U* to clear the contents,
- enter new text by typing on the keyboard.

Radio switches

These are small diamond shaped switches displayed in groups of two or more and are used to select one option from several in the group.

The selected switch is shown with a small red diamond. The other switches are in light grey. (*Visible foreground layers* is the selected switch.) Only one switch from a group can be selected at any time. If you select another switch (by clicking on it), the previously selected switch is deselected.

Bump icons

These let you make small adjustments to an editable field (usually steps of one unit).

Click on the up arrow to increase the value; down to decrease.

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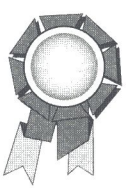

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